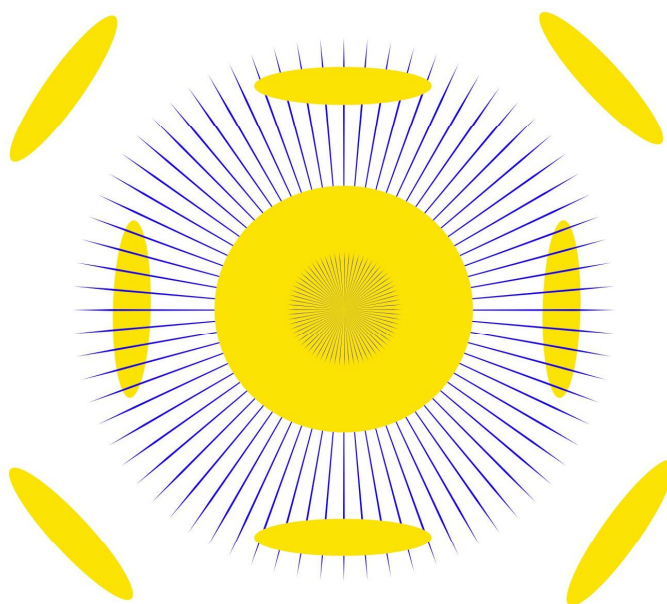


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THE PSYCHOLOGY OF THE RUSSIAN GENOCIDE: TOTAL DESTRUCTION OF THE DEFENSELESS

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Military Extermination of Children

The military destruction of children and youth in Ukraine is foreseen both by the declared goals of Russia's war against the Ukrainian state and the Ukrainian people, in which the entire collective "West" is personified, and by the practice of its conduct. The named goals of denazification and demilitarization denote the Russian understanding of the destruction of any non-Russian people whose marker is the Russian language (denazification) by military suppression of its resistance (demilitarization). The Russian idea that Russia ends where the Russian language ends means, in practice, that the borders of Russia do not end anywhere, since the Russian invaders are nomads in all the spaces of Eurasia available to them, where they are occasionally lucky not to receive decisive military resistance.

The attitude towards the people of any other, except Russian, nations that the Russians have set themselves the goal of destroying, necessarily and primarily includes the most vulnerable strata, which are considered simultaneously as a burden in the course of the war, and as unwanted witnesses of war crimes, and as unnecessary, which cannot be used in any other way, except for the satisfaction of sexual urges, sadistic compensation of one's own personal inferiority and the possibility of robbery. These strata primarily include children, women, and people with disabilities. The instruction that in order to win over Ukraine, the Russians are obliged to destroy Ukrainian children, does not have a single author, since it is practically embodied by the Russian invaders without exceptions, which, if such can happen, require their own separate study as an action contrary to the general rule. In this way, the Russians implement the practical idea that is close and understandable to everyone of "complete cleansing of the Ukrainian population" as the only chance for the continued existence of Russians and Russia.

Nomadic Psychology of the Russian Invaders

Russians, as the heirs of nomads, whose purpose is systematic nomadic robberies, murders and robberies, during the last millennium of known history, have quite clearly revealed their bloody nature, which surpasses all wars and military conflicts of other nations of the planet known for their cruelty. This purpose of the Russians in the 19th and 20th centuries was embodied in the idea of Pan-Mongolism: Europe will be destroyed by a new, Orthodox horde, which is the scourge of God for the sins of the West, which consists of two values imposed by it - Christianity and human rights. Russia's special path is Eurasian, designed to destroy the West and create its own empire from Vladivostok to Lisbon.

Nomadic psychology as a basic psychological concept entered scientific circulation thanks to the works of Salzman (1983), Brinkmann Svend (2020), and Scholz and Schlee (2015) covered nomadic behavior and stories in general. Russia's chronic urge to military nomadism is reflected by persistent attention to nomadology (Widder, 2018).

The data of many polls of Russian citizens show that they approve of the war for the destruction of all Ukrainians and the conquest of all their territory. Based on this, people with disabilities are included in this general intention of the Russians to destroy all people, but as the consequences of Russian crimes in the cities of Gostomel, Bucha, Irpin, Borodyanka, Mariupol, Bakhmut, Maryinka, Rubizhne, Popasna, Volnovakha, Liman, In Izyum, Vugledar, Soledar, Kupyansk and the villages close to them, the Russians, with no less systematicity and brutality, also shot all the animals they saw - dogs, cats, cows, goats, horses. Moreover, the dogs were nailed by their paws to a wooden ladder and the intestines were taken out of this still-living animal and pieces of live meat were cut out and eaten.

The head of the Luhansk regional military administration, Sergii Gaidai, told the story of one man out of 80 people shot, who managed to escape from the Russian invaders¹. Thus, people were evacuated by a convoy of civilian vehicles from the city of Kreminna, Luhansk region, where Russian troops had already entered. The Russian military began to shoot them. People got out of the cars with raised hands, waving white towels, rags, T-shirts, showing that they were civilians, but the Russians shot everyone. Only one man was wounded in the leg and fell into a ditch. After waiting for the execution to end, he crawled out of this place, hid from everyone in the woods and escaped. He left for Poland and is currently in the hospital undergoing surgery. A crippled man told about this shooting, which did not make any distinction between adults and children, healthy and disabled - the Russians shot everyone.

Consequently, generations change, and people grow up, who are unable to imagine the limits of the cruelty of the Russians, who are in a state of constant mimicry and thus traditionally hide from any responsibility for the crimes committed. Avoidance of historical responsibility is carried out by constantly replacing one's self-name – neosignification: Russians, Russians, Soviet, Great Russians, Muscovites, etc. In general, in our opinion, for the sake of scientific accuracy, it is worth taking into account all previous self-names of modern Russians in the implementation of their historical missions to destroy any other nations that did not merge into an aggressive grouping in the form of a horde, ulus, kingdom, empire, union or modern federation.

The mission of destroying all others as a vital credo of Russians during the previous and current centuries cannot diminish the role of the genetic factor, the purpose of which is to obtain sustenance by the most archaic way of hunting other peoples with the aim of killing them to satisfy their own material needs, which is embodied in the official purpose of Russians and Russia in “collecting” and “increasing land”, and with it the property and other values of the annexed countries or their parts.

The actual border between the places of residence of Muscovites is the northeastern borders of the ethnic settlement of Ukrainians, not the Ural Mountains, artificially brought into geographical use on the verge of transforming the Moscow Ulus into an independent state entity - a kingdom following the example of European countries with a voracious desire for imperial greatness.

Acts of the Muscovite state testify to the genetic tendency of Muscovites of that time, inherited by current Russians, to murder, theft and bragging about their meanness. This is the fulfillment of the decree of the Moscow tsar regarding the total murders of “Lithuanian people”, the burning to the ground the cities of Slutsk, Kletsk, Slonim, Misha, Novomysha, Stolovychi, Myra, many villages and other settlements of the State of Lithuania: Muscovites: “...According to your state decree...they fought and burned, and people were killed...”²

1 Sergii Gaidai, head of the Luhansk Regional Military Administration (interview):
<https://www.youtube.com/watch?v=367UKZruKaI>

2 Acts of the Moscow state. T. 2. St. Petersburg, 1894. Unsubscribe from the boyar and the governor of the prince. Alexei Trubetskoy about several victories over the Lithuanian people, and about the capture and burning of several Lithuanian cities, and the sovereign's letter of praise to the boyars of 1655 No. 717. pp. 437 – 439. (Акты московского государства. Т. 2. СПб., 1894. Отписка боярина и воеводы кн. Алексея Трубецкого о нескольких победах над литовскими людьми, и о взятии и сожжении нескольких литовских городов, и государева грамота с похвалою боярам 1655 г. № 717-й. С. 437 – 439).

Today, few people in Europe remember the more than three-hundred-year-old Baturyn tragedy of Ukraine, when on November 2, 1708, Moscow troops captured and destroyed the Ukrainian capital of Hetman Mazepa - the city of Baturyn. All residents of the city, regardless of age and gender, were slaughtered - children's burnt bones were sticking out of the remains of the destroyed buildings of Baturin, which we observed during the reconstruction of the burned city in 2006 - 2010. 15 thousand Baturin residents - adults and children - died. The city itself was looted, including the Orthodox churches, and then burned, and the churches were destroyed.

The European newspapers of the time called the Moscow crimes in Baturin: "Terrible massacre", "All Ukraine is covered in blood", "Women and children on the points of sabers". The leading French newspapers "Gazette de France", "Paris Gazette", "Lettres Historique", "Mercure Historique", "Clef du Cabinet" were published with these names. Newspapers testified that the Muscovite tsar was terrible and bloodthirsty in Ukraine, and all the inhabitants of Baturin, regardless of age and gender, were slaughtered, as dictated by the inhuman customs of the Muscovites.

Defenseless Are Those Who Do Not Fully Understand the War Situation

Juveniles are people with a limited understanding of the war situation, although an incomplete understanding of it is characteristic of any adult, since each of them is unique, and typical, habitual settings may turn out to be inconsistent with previous life experience.

Psyche is a sensitive guardian of the physical existence of every living being both on our planet and, we believe, in all places in the cosmos where sufficient conditions for the development of life arise. War, as a process of causing death to all living beings, causes the emergence of specific reactions in people, animals, birds, insects, and other carriers of life for a threat to their own existence. This applies primarily to healthy states of the human psyche and has its own characteristics in childhood.

In adults and children without an established disability due to a chronic mental illness, as well as for persons with the specified disability, clinical examinations testify to an increase in the number of cases of mental trauma and their consequences, which include the appearance of stress disorders, anxiety and especially panic states and phobias, addictions, depression, as well as psychotic and paranoid symptoms. Cardiovascular pathology, manifested in arterial hypertension, delusions or obsessions, the occurrence of which is caused by traumatic experiences of life-threatening events, sleep disorders, occupies the main place among the concomitant psychiatric and psychosomatic disorders.

The war situation affects the strengthening, expansion and deepening of relationships between stress and personality disorders, and the increase in the number of patients with complex post-traumatic stress disorder (PTSD) and post-traumatic stress disorders. Among the civilian population, military and medical workers, the number of typical war injuries is increasing - craniocerebral injuries, injuries to various parts of the body and the occurrence of associated phantom pains, states of emotional instability and exhaustion. Mental traumatization covers a wide range of people, among whom children and adolescents are most prone to the manifestation of adverse consequences for mental health in the future.

Limitations of understanding and physical capabilities are inherent in the most vulnerable categories of the population, which include both minors and persons with limited capabilities due to disability. Military actions lead to the transition from one category to another, that is, the invalidation of both adults and children without distinction of age.

Psychological Problems that Need To Be Solved in the 21st Century

An urgent need to counter the Russian genocide is scientific research and expert work to determine the amount of moral (psychological) damage caused to citizens of Ukraine and other states, stateless persons who suffered as a result of or in connection with the military aggression of the Russian Federation against Ukraine. This is necessary regardless of the period of men-

tal suffering that the individual suffered in connection with the destruction or damage to his property; degrading the honor and dignity of an individual, as well as the business reputation of an individual or legal entity; other consequences related to harm to health, life of a person, loss of relatives and friends, their deportation, torture, mutilation, and other harm caused. It is worth agreeing with the opinion of Lamanauskas (2023): “When applying a systemic approach, new problems that have not been understood until now come to the fore, and new directions of scientific research are initiated. In the process of education, there is a huge variety of factors that determine education”. Global education is now impossible without a system of familiarization and understanding of the Russian genocide of the peoples of the world during the current and previous centuries. However, in this context, it remains important that “education for peace, as a continual process, leading to peace culture growth and support, should occupy a suitable position in children and youth education in the nearest decades” (Lamanauskas, 2015, p. 5).

Full determination of actual and delayed consequences of moral (psychological) damage caused to individuals and legal entities in Ukraine and abroad will allow creating an international register of moral (mental) damage caused to individuals and legal entities regardless of their location.

Important are:

- implementation of fundamental and applied scientific research aimed at developing methods of psychological examination of moral (psychic) damage caused to a person, regardless of the statute of limitations, age of the person, country of residence and other circumstances;
- creation of an equipment base for psychological and psychophysiological measurements of the condition of the affected persons, providing them with the necessary specialized psychological assistance;
- development and substantiation of proposals for improving the international legal framework in the field of determining and compensating damages caused as a result of the Russian Federation’s military aggression against Ukraine;
- organization and provision of the necessary types of pre-trial, court and post-trial support of the injured persons, which includes the provision of legal and psychological assistance to the injured persons, which includes the advocacy of relevant lawsuits, their presentation in court, nationwide monitoring of the execution of court decisions;
- involvement of the best specialists from all countries of the world in carrying out research and expert work, their encouragement and professional improvement;
- international educational activity aimed at identifying and fully determining the extent of moral (psychological) damage caused to persons who suffered as a result of the military aggression of the Russian Federation against Ukraine, in any country of the world, including newborn generations.

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EDUCATIONAL LEADERSHIP AND WORK-RELATED STRESS: AN EXPLORATORY INVESTIGATION ON SCHOOL MANAGER

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Abstract

Contemporary studies highlight how chronic stress influences a person's state of health and psycho-physical well-being. A high allostatic load, resulting from chronic hyperactivation of the stress system, contributes to several negative consequences for individual health status in the long term.

The study showed that the stressful and problematic situations of managerial work are numerous and that they radically influence individual psychophysical well-being both in the professional context and in private life. Greater attention to the evaluative dimension of managers' discomfort is useful and functional, in order to promote improvement actions that concretely constitute an opportunity to reflect on the "managerial practices" adopted that can create workplace discomfort.

This study has led to the need to promote good practices for the prevention of mental health and the activation of coping strategies and protection systems.

Keywords: *educational leadership, school management, school manager, work-related stress*

Introduction

The profound changes that have affected the process of autonomy of Italian school institutions and the optimization of a training offer that is more responsive to contemporary emergencies, have led to a redefinition of the figure of the school manager. In the perspective of a digital and inclusive school networked with families and institutions, the SM (School manager) takes on a complex function as an expert and multi-purpose coordinator (Le Rose, Riccardi, 2015). The workload and new skills have questioned traditional leadership models and highlighted the levels of stress related to managerial roles in public administration.

The SM has the task of managing the budget, ensuring continuous training and professional development of staff, and coordinating training. Secondly, the SM has responsibility for both seeking funding and effectively managing human and financial resources. Finally, he promotes interventions aimed at guaranteeing the educational success of students and takes care of the implementation of the Educational Offer Plans and the pursuit of educational objectives (Ferrante, 2015).

Considering the complexity of this professional figure, it becomes important to understand how stress levels impact individual well-being and, consequently, the effectiveness and efficiency

of the different levels of the training system. Faced with the numerous tasks and responsibilities envisaged, the SM is subjected to bureaucratic and regulatory constraints which severely limit his decision-making autonomy. In addition to the difficult personnel selection and incentive system, the output of the training processes and the outcome of the provision of services must be subjected to cyclical monitoring, evaluation and publication processes for the transparency logic of the public administration.

Although there is extensive literature that highlights the connection between leadership quality, managerial organization, and good training practices (Bloom et al., 2015), the mental health and psychophysical well-being of SM are still poorly researched topics.

This work explored the work-related stress phenomenon of SM through a quantitative survey aimed at outlining the perceptions and representations of educational leadership. With a view to the well-being perceived in one's professional context, the survey aimed to identify any emerging stressors through the exploration of the perception of school managers regarding organizational and management practice, through the identification of strengths and possible criticality of the management processes, the verification of the source of any discomfort and the understanding of the dynamics of origin. In relation to the objectives of the survey, a questionnaire was constructed aimed at investigating the participants' perception of their management and leadership role.

The study showed that the stressful and problematic situations of managerial work are numerous and that they radically influence individual psychophysical well-being both in the professional context and in private life. The recognition of the levels of stress expressed by managers allows us to identify risky situations for the health of the individual and the organization and leads to the need to promote good practices for the prevention of mental health and the activation of coping strategies and protection systems.

Research Methodology

General Background

According to the report *Principali dati della scuola – Avvio Anno Scolastico 2023/2024* published by the General Directorate for Information Systems and statistics of the Ministry of Education in September 2023, regions with the highest number of educational institutions are Lombardy, Campania and Sicily and, specifically, Campania holds the sad record of undersized educational institutions. Furthermore, for the 2023/2024 school year, in Campania, there are 124 regencies, i.e. schools that do not have an SM are entrusted "in regency" to a head of another school institution, resulting in considerable leadership and coordination difficulties "at a distance". This happens in the most fragile and peripheral areas of the region, where the professional figure of the SM clashes with socio-cultural problems and the scarcity of available resources in the face of an overnumber of classes, alternating his presence between multiple structures amidst coordination difficulties and leadership.

According to the report *Alla ricerca del tempo perduto – Un'analisi delle disuguaglianze nell'offerta di tempi e spazi educativi nella scuola italiana*, published by Save the Children in September 2022, in Campania, Calabria and Sicily, more than 60% of students do not reach the basic level of Italian language skills. Furthermore, in the southern regions, a higher percentage of school dropouts than the national average, with a peak of 19.8% in Campania. In the provinces of Campania, approximately half of the schools do not have a certificate of viability or services dedicated to canteens, full-time courses, and sports.

A third survey useful for understanding the context of the research is the Survey on the levels of stress and well-being of Italian school managers published by the National Association of Public Managers and the National Observatory of Teachers' Health and Wellbeing in 2018 which shows a condition at high risk of psychophysical discomfort, relating above all to two dimensions: the perceived demands and the relationship with the Administration.

Definition of Stress, From Individual Stress to Work-related Discomfort

In such a diversified framework, it is necessary to clarify what is meant by stress and work-related stress, with particular reference to the professional figure of the school manager. The word stress identifies both the cause and the effect of exposure to elements of discomfort that can give rise to a more or less serious psychophysical imbalance. The tension of the individual emotional load can overload the psychophysical structure of the individual, leading him to give in. In these cases, the resources available constitute a safety and protection device useful for reacting and building a new life path oriented towards resilience (Acquarini, 2022). The meaning that each individual attributes to stressful events reveals the sensitivity of tolerance to stress unconsciously built based on one's life history, activated conflicts, survival strategies, attempted solutions, and the disposition of one's social group.

Individual stress can take on its own peculiarities based also on the different contexts of activation; for this reason, it is limiting to talk about burn-out, but it is more correct to identify symptoms that can be placed on a broader spectrum in order to understand the variability of the psychophysiological response. From this perspective, even a failure to understand the discomfort already represents in itself a dangerous risk factor that could amplify individual vulnerability and amplify its impact (Acquarini, 2022).

The type of impact that stressful events produce on the organism depends on the psychophysical conditions of the individual. The state of stress leads to poor adequacy in managing events, both in the sense of not being able to resolve the difficulties that arise and in poor prevention in order to avoid the onset of the phenomenon. Different people, in the presence of the same critical input, can give different answers as they depend on risk factors that involve the individual in his biological, psychological, and psychosocial components and in the degree of belonging to a specific socio-cultural and educational context of reference. Events perceived as stressful originate from heterogeneous situations and concern the individual's relationship with their life context. In this regard, it is important to specify that stressful experiences can become traumatic but a direct link between stress and trauma is not always discernible (Vaccarelli, 2016).

Specifically, "work-related stress is a condition of subjective response to environmental demands and pressures that are incongruent [...] with one's skills, abilities and/or work role. The subject is exposed to a series of environmental demands and pressures experienced as excessive given the capacity for adaptive response" (Acquarini, 2022). When the accumulation of stress becomes so overwhelming as to limit coping responses, an acute phase can arise, which in the most serious cases leads to stress/trauma-related syndromes.

Finally, for SM, research on distress and burnout has identified how the source of stress for school leaders is the boundary-spanning stress type - linked, that is, to an overload of tasks, deadlines, and expectations.

The Role of School Manager and Complexity Leadership

First of all, the SM must have the skills of a manager regarding the management of the available financial, human and instrumental resources and must also be able to motivate and coordinate the multiple actors of the training trajectories. School management represents a complex system, made up of multiple heterogeneous and interdependent dimensions: the educational dimension, the organizational dimension, the relational dimension, and the administrative dimension (Carlini, 2012).

Secondly, the SM is an educational leader who carries out a management function of coordination and optimization of educational resources and a relational function in the various nodes of the network, which see the school at the centre of a complex communication process between families and institutions on formal, non-formal and informal levels. Finally, the manager takes on public functions and must report the outcome of his administrative, organizational, and public actions in terms of quality and transparency (Barzanò, 2011).

Within the school as a complex organization, various components come into relation which constitute the well-being of the school manager both from an individual point of view and from the point of view of his collective management and leadership skills.

Research Objectives

The exploratory research, taking into account the premises presented so far, had as its main objective the verifying type of perception that school managers have on the subject of well-being at work and also evaluating whether work-related unwellness depends more on the administrative-accounting load or from the organization of teaching processes.

In particular, the analysis focused on the constructions of sense and meaning with which SM represent their condition as managers and leaders, from the point of view of well-being or discomfort at work, to arrive at the most extreme forms of work stress.

The research investigated the real working situations of SM also with the aim of identifying obstacles of a technical-organizational nature that can promote forms of work-related stress, to explore the essential aspects that characterize the professional life and expectations of the school manager, and in particular whether and to what extent administrative-accounting management causes conditions of discomfort, also taking into account how it influences leadership motivation, relational dynamics and the behaviours that the school manager implements in his professional practice and on his personal life project.

In line with the theoretical framework of reference, the research overall set the following objectives:

- Explore school leaders' perceptions of organizational and management practice;
- Identify the strengths and any critical points of the organizational and management processes;
- Verify the source of any psychophysical discomfort.

Sample Selection

The research analyses what actually happens in the schools of the province of Salerno in the Campania Region (Italy) and, in particular, to school managers in terms of well-being or discomfort. The reference population is made up of all the secondary school managers of the province of Salerno, in which there are 209 educational institutions. All managers in the province of Salerno were contacted but only 97 filled out the questionnaire.

Out of a sample of 97 school managers, 37.1% are male, 62.9% are female. There is a prevalence of women in the world of schools who carry out the work of managers. As regards chronological age, 23.5% of the participants stated that they were aged between 41 and 50, 47.1% stated that they were aged between 51 and 60, and 29.4% said they were over 60 years old.

Instrument and Procedures

In relation to the objectives of the research, a questionnaire was constructed aimed at investigating the participants' perception of their management and leadership role.

The questionnaire made it possible to measure the nature and intensity of opinions and attitudes. It is characterized by pre-coded and predisposed answers, avoiding the risk of considering all the other possible answer alternatives, taking into account the fact that the answers do not have the same meaning for everyone.

The preparation of the questionnaire was very delicate. The construction of a questionnaire from scratch must be approached with caution, its preparation is an onerous activity which must be foreseen only when there is a real absence of alternative information sources or when it is considered that the additional information, the in-depth analysis, the originality of the data obtainable, really justify its use. It proceeded with the aim of preparing an instrument that fully responded to the required comprehensibility principles, based on a Likert-type survey scale (Cox et al., 2003).

Before proceeding with the definitive construction, the problem and the aim to be achieved were identified, then translated into the construction of the various items, taking care to avoid biased questions, which suggest a double answer and questions.

In constructing the items, no specialist terminology deriving from specific documents was used. This was to prevent the managers from responding (due to the effect of suggestion) in a non-spontaneous manner to the questions asked but based on the implicit answers already contained in the documents.

Subsequently, the relevant items were formulated and grouped in the same area by theme, in order to facilitate the respondent's concentration on a single topic at a time, and then continue with the next step. In formulating the items, the idea was considered that each question should be focused on a single topic, be short (since a long question is less focused than a shorter one) and clear, with language understandable to each interviewee.

Once the final text of the questionnaire had been drawn up, the halving test was carried out: the questions in the questionnaire were grouped two by two; thus, two parallel questionnaires were obtained. The responses were recorded by separating those relating to half of the questionnaire from those relating to the other half. In the end, it was found that no significant differences emerged between the two questionnaires. Nevertheless, it was deemed necessary to proceed with the administration of the questionnaire through pretesting.

In order to test and validate the questionnaire, a pilot study was then carried out with a group of 25 people represented by school managers. The study was able to count on participants who were highly motivated and interested in the research topic and who revealed a high availability during all the different phases of the research. Testing of the instrument highlighted that the order of items in the questionnaire, presented according to an established sequence of paradigms, does not influence the choice of subjects' preferences (Pitrone, 2009).

The questionnaire is divided into three sections:

1. Information section, which includes socio-demographic data, including gender, age group, tenure in the role of manager, any vicarial functions previously held, school degree;
2. Motivations section, which includes the choice to become a manager, the correlation between initial expectations and the actual job, the presence of intrinsic and extrinsic motivations in the workplace;
3. Evaluation section, which includes the working life of the school manager and the possible correlation with psychophysical discomfort.

To maintain anonymity, the questionnaire did not require the compilation of personal data (name and surname); it was sent to all schools in the province of Salerno online.

The tool was a valid screening support for recording the psychosocial workload that affects the working life of the school principal. It is marked by a structured set of items and related response categories defined in advance; the interviewee is asked to identify among the responses presented the one that comes closest to his own position.

All sections, except the information section, provide, for each of the items, a response format consisting of a Likert scale where participants must indicate the degree of agreement or disagreement with each of a series of statements regarding the object of the measurement, ticking off just one statement between a lot, somewhat, a little, not at all.

Data Analysis

The quantitative investigation was carried out according to the theoretical perspective of descriptive research which aims to describe a phenomenon and interpolate it starting from the data that are collected (Lucisano, Salerni, 2002), not stopping at the simple collection of data but providing for their specification processing and interpretation, also taking into account the relationships between the variables being surveyed.

The choice of questions and their construction follow the preliminary study of the context and the historical-social background, in order to identify more precisely the elements characterizing the situation under examination. The construction of the questionnaire followed precise methodological

criteria, in order to identify questions aimed at verifying the research hypotheses. Each question was structured to provide a unique answer, functional to the investigation objectives.

The questionnaire data were subjected to an exploratory factor analysis (principal component analysis with Varimax rotation and Kaiser normalization) using the SPSS 19.0 statistical analysis software. Factor analysis is a multivariate analysis technique that allows you to control and highlight the nature of the relationships between multiple explicit variables and the latent factors dependent on these relationships.

The analysis of the data made it possible to identify that among the various transversal-organizational risk factors, administrative accounting management is the etiological variable. It takes on ever greater importance in organizational contexts such as schools, characterized by continuous innovations of an economic-financial nature which require coping strategies and cognitive-emotional empowerment useful for dealing with the stress phenomenon.

Research Results

Section 1

Information section, which includes socio-demographic data, tenure in the role of manager, any vicarial functions previously held, and school degree.

Table 1
Breakdown by Age of the Sample Under Study

From 41 to 50	From 51 to 60	> 60
23.5%	47.1%	29.4%

As regards the years of service, 52.9% of the participants declare that they have been carrying out this job for less than 5 years, 29.4% declare that they have worked as a manager for 6 to 10 years, while 5.9% claim to have been doing this activity for 11 to 15 years. Only 11.8% say they work for more than 15 years. From the point of view of the managerial profile, there are very young managers in the province of Salerno (52.9 have less than 5 years of active management).

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Table 2
Breakdown by Years of SM Role

Less than 5 anni	From 6 to 10	From 11 to 15	> 15
52.9%	29.4%	5.9%	11.8%

The previous performance of vicarious functions was also verified: 36.5% of the participants declared that they had never carried out vicarious function 28.2% declared that they had carried out the functions of vicar for less than 3 years, 24.7 % claimed to have carried out the functions of vicar for a period ranging from 4 to 7 years. Only 10.6% declared having held the role of vicar from 8 to 12 years.

Table 3
Breakdown by Years of Carrying Out Vicarial Functions

No	Less than 3 years	From 4 to 7	From 8 to 12
36.5%	28.2%	24.7%	10.6%

The managers who completed the questionnaire were divided into four school levels. 11.8% work in educational circles, 5.9% work in lower secondary schools, 52.9% work in comprehensive institutes and 29.4% work in upper secondary schools.

Table 4
Educational Institutions Where They Perform the Role of SM

Educational circles (EC)	I grade	Comprehensive Institutes (CI)	II grade
11.8%	5.9%	52.9%	29.4%

As regards the motivation that pushed the current SM to become one, 56.3% declared that they did it to fulfill themselves professionally. 26.4% expressed the desire to improve society through school and only 17.3% became managers to take care of the cultural and human education of the new generations.

Section 2

Motivations section, which includes the choice to become a manager, the correlation between initial expectations and the actual job, the presence of intrinsic and extrinsic motivations in the workplace.

Table 5
Reasons for Choosing to Become a SM

Professional achievement	Improving society through school	Taking care of the cultural and human education of the new generations	Practical order
56.3%	26.4%	17.3%	---

Having probed their expectations compared to the initial expectations through a specific question, 32.4% responded that they expected the opportunity to participate in significant processes of change, 29.4% an exciting job on a scientific and human level, 23.5% an intense ethical and social commitment, 14.7% a fulfilling and decently paid job.

Table 6
Expectations Compared to Initial Expectations

Participate in significant processes of change	An exciting job on a scientific and human level	An intense ethical and social commitment	A fulfilling and decently paid job
32.4%	29.4%	23.5%	14.7%

Speaking about the evolution of the managerial career, 35.3% of the participants declare that they see an improvement, 17.6% affirm that the managerial profession has evolved for the worse (we do not know in what terms), and 47.1% state that the school leadership has remained unchanged.

Table 7
Your Management Profession Evolved from the Beginning of Career to Today

For better	For worse	Unchanged
35.3%	17.6%	47.1%

To the question “Currently would you make the same choice again?”, 64.7% say they want to make the same choice again, while 20.6% say they don’t know whether to make the same career choice again, and 14.7% say they don’t know if they want to make the same choice.

Table 8
Repeated Professional Choice

Yes	I don’t know	No
64.7%	20.6%	14.7%

“How much, in your opinion, is your professionalism valued?” According to the reading of the data, only 2.9% of the participants state that the management profession is highly valued, 52.9% state that the management profession is quite valued, and 44.2% maintain that management professionalism is little appreciated.

Table 9
Perception and Enhancement of One’s Professionalism

A lot	Somewhat	A little	Not at all
2.9%	52.9%	44.2%	---

Section 3

The evaluation section characterizes the working life of the school manager and the possible correlation with psychophysical discomfort.

The mental commitment, given the specific tasks of the DS, is evident. The interviewees, when asked, “Does your job mentally strain you?” responded a lot (88.2%) and quite a lot (11.8%).

Table 10
Your Job Strains Mentally

A lot	Somewhat	A little	Not at all
88.2%	11.8%	---	---

When asked to make an assessment of the management activity in the school, 64.7% considered themselves quite satisfied, 8.8% satisfied, and 26.5% considered themselves not very satisfied with the activity carried out.

Table 11

Perception of Work as an MS Today

Dissatisfied	Not very satisfied	Somewhat Satisfied	Satisfied
---	26.5%	64.7%	8.8%

Exploring the reasons for dissatisfaction or low satisfaction, it emerges how much changes are the cause: 34.2% responded that dissatisfaction can be attributed to disappointment with expectations of change, 32.4% to the difficulty of adapting to continuous changes, 12.5% to the loss of the sense of doing school, 11.6% to disappointment with respect to one's initial expectations, 9.3% to difficulties in inter-institutional communication.

Table 12
Reasons for Dissatisfaction or Low Satisfaction

Reasons	%
Disappointment compared to expectations for change	34.2
Disappointment compared to one's initial expectations	11.6
Difficulty in adapting to continuous changes	32.4
Difficulty communicating with colleagues	---
Difficulty in interinstitutional communication	9.3
Poor social recognition	---
Loss of the sense of doing school	12.5

“What is your feeling about the activity you carry out?” To this question, 58.8% of those interviewed responded that they were able to exercise satisfactory control, while 41.2% stated that they were not able to control it as much as they would like.

Table 13
Feeling about the Activity to Carry Out

Feeling	%
I can exercise satisfactory control over it	58.8
I can't control it as I would like	41.2
I feel confused	---
Other	---

The results obtained are commensurate with the effort and energy expended for 26.5%, while for 73.5% only partially.

Table 14
The Relationship between Efforts and Energy Expended

Yes	Only partially	No
26.5%	73.5%	---

We then wanted to analyse how much working life affects family life. It emerged that this actually happens: a lot for 64.7%, enough for 23.5%, and little for 11.8%.

Table 15
Daily Impact on Family Life

A lot	Somewhat	A little	Not at all
64.7%	23.5%	11.8%	---

Specifically, this influence is indicated, for the majority, with the generation of non-positive sensations that tend to dominate family life. Reading the results to the question “If you answered a lot or enough to the previous question: the manifestations you noticed refer to...”, it was found that these manifestations refer to nervousness in family relationships for 46.6%, reduction of desire to communicate for 20.1%, communication difficulties for 3.2%, reduction of the desire to communicate for 20.1% and communication difficulties for 3.2%. 4.3% showed an increase in psychological detachment and 5.1% wanted to escape.

Among the positive sensations, 11.3% declared having serenity and balance in family relationships and 9.4% increased the desire to communicate.

Table 16
Psychological and Sociological Manifestations in Family Life

Manifestations	%
Nervousness in family relationships	46.6
Serenity and balance in family relationships	11.3
Reduction in the desire to communicate	20.1
Increased desire to communicate	9.4
Increased aggression/reduced aggression	---
Willingness to participate/reduction of the sense of isolation	---
Desire to escape	5.1
Increase in psychological detachment	4.3
Communication difficulty	3.2
Ease of communication	---
Other	---

To analyse the sense of extraneousness with respect to the assignment received, the following question was formulated: “Have you ever, while working at school, asked yourself “what am I doing here?” or in any case feel a sense of strangeness?” to which 44.1% responded never, 50% sometimes and only 5.9% several times.

Table 17
Perceived Sense of Strangeness

Several times	Sometimes	Never
5.9%	50.0%	44.1%

Speaking of symptoms related to professional stress, 64.7% declared that they had sometimes felt such symptoms, 20.6% for periods of less than two weeks, 14.7% of those interviewed declared that they had never felt them.

Table 18
Perception of Symptoms Related to Professional Stress

Sometimes	Periods less than two weeks	Never
64.7%	20.6%	14.7%

They were also asked to indicate which of the signs of distress (among those listed) they had recently noticed. 44.1% of those interviewed declared that they had never experienced any of the symptoms listed.

Table 19
Signs of Distress in Recent Behaviour at Work

Signs of distress	%
Intolerance towards Staff	8.8
Intolerance towards work	---
Feeling of monotony at work	5.9
Worsening of communication in the private sphere	24.7
More frequent time checking	11.8
Increase in the frequency of colds and flu	2.9
Frequent headaches and gastrointestinal disorders	11.8
I have never experienced any of the symptoms listed above	34.1
Other	---

In the relationship between years of service and the idea of the managerial profession from the beginning of the career, it emerges that length of service makes one perceive the evolution of the profession for the worse.

Table 20
How the idea of a management profession has evolved from the beginning of your career to today

	DS from less than 5 years	From 6 to 10 years	From 11 to 15 years	Over 15 years
For better	22.7%	22.8%		
Worse				37.2%
Unchanged			17.3%	

From reading the data, a less than optimistic vision emerges regarding leadership action in the work organization. Only 26.5% say that the results achieved are directly proportional to the efforts made. Table 24 makes us reflect on the 73.5% of participants who do not consider themselves sufficiently gratified in terms of the results obtained. It seems clear that many times the work of managers is underestimated both from an organizational and socio-economic point of view. This could be a “sentinel” factor to take into consideration.

Table 21
Relationship between Results and Professional Commitment

Yes	Only partially
26.5%	73.5%

64.7% of school managers say they have experienced symptoms attributable to work-related stress, while 20.6% say they have experienced these symptoms for periods of less than two weeks. Only 14.7% declare that they have never experienced symptoms attributable to work stress.

Table 22
Relationship between short period of time (over two weeks) and symptoms attributable to work-related stress

Sometimes	Periods less than two weeks	Never
64.7%	20.6%	14.7%

As regards the administrative accounting burden, 11% say they do not feel worried at all, 19% say they feel a little worried, 17% say they feel quite worried, and 53% say they feel very worried about administrative accounting management.

Table 23
Administrative-accounting Management

A lot	Somewhat	A little	Not at all
53%	17%	19%	11%

Regarding the organization of teaching processes, it is found that 55% do not worry at all, 16% worry a little, 11% worry quite a bit, and only 18% worry a lot.

Table 24
Organization of Teaching Processes

A lot	Somewhat	A little	Not at all
18%	11%	16%	55%

The results relating to the teaching load or administrative load questionnaire demonstrate that the majority of managers who participated in the research declared themselves much more stressed by the administrative load than by the teaching load. The managers most concerned about the administrative burden are aged between 41 and 60 and have been managers for a few years.

Table 25
Managerial Group Most Concerned about the Administrative Load

From 30 to 40 years	From 41 to 50	From 51 to	Over 60
---	42.3%	37.5%	20.2%

It emerges that tolerance for administrative accounting management is different in males and females. Males declare themselves much more inclined to deal with accounting and financial administration issues, while females show very strong difficulties in terms of administrative load.

61.8% of women say they are very worried about financial management and, therefore, about the administrative load, and only 38.2% of males say they are worried about issues related to accounting, the financial year and everything that falls within the administrative-accounting management. The determining factors regarding tolerance to this management, therefore, are also to be found in the gender difference.

Discussion

The international debate defines stress as pressures deriving from the amount of work (Sutherland, Cooper, 1988), or as the person's capacity for resources and adaptation (Lazarus, 1966) and even the influence of the social climate (Lewin et al., 1939) as one of the factors triggering work-related discomfort.

Much research shows that chronic stress produces multiple disease conditions. A high allostatic load could result from chronic overactivation of the stress system, contributing to a series of negative long-term health consequences, such as diabetes, hypertension, cancer, and cardiovascular disorders (McEwen, 1998), alterations of this balance which can determine a dysregulation of the stress response system and increase vulnerability to disorders related to it (Kloet, 2005).

The emotional overload, therefore, affects the spheres of personality, life history, expectations and relationships, profoundly influencing not only well-being in the work context, but the entire individual, family and socio-relational psychophysical structure.

It is, therefore, necessary to try to understand how individual and contextual factors intersect with well-being and/or discomfort at work.

The results of national and international research achieved so far show us how important it is to continue research in order to identify the actions to be taken to face work-related stress.

New models and resolution strategies are necessary to improve a dysfunctional work situation in other spheres of life. The actions to be undertaken for the research and its practical implications are still far from the objective of making the working context and its dynamics optimal for the complete well-being of educational leaders.

Conclusions and Implications

Workplace discomfort is a well-known problem among public administration managers. The school, as a complex organization, presents a series of factors responsible for transversal risks, including work-related stress.

The study shows that there are numerous situations that expose school managers to a high risk of work-related discomfort. This is due to the peculiarity of the administrative-accounting work that involves the life of school managers, and which must be addressed taking into account the rapid changes in sector regulations, "financial emergency" situations, environmental conditions, the lack of human and instrumental resources, factors that can create tension and instability at work leading to extreme forms of work-related stress. Recognition of the stress levels expressed by school managers will allow us to identify in subsequent research work, those changes, such as useful behaviour, coping strategies and good practices for the prevention of mental health, necessary to improve individual style of life and consequently professional one.

Another problematic element that emerges from this investigation, and which deserves further investigation, is the role of relationships at school: some participants report, in fact, having experienced more or less serious unpleasant and unwanted relationships.

Over 90% of managers declare that they find themselves in work situations that generate emotional distress, 86% of the sample declare that they do an emotionally demanding job and 65.8% of managers declare that they have suffered conflicts or quarrels at school.

The data collected represents an important wake-up call for understanding the levels of stress related to violent and threatening acts linked to the role of school manager. On the other hand,

some important protective factors emerge, including the meaning attributed to one's profession and the degree of job satisfaction which could contribute to lowering the risk of professional discomfort. In this context, systemic work on risk protection and prevention factors for the physical and psychological health of managers appears necessary both for the well-being of the individual and for the overall health of the organization.

From these considerations emerges the awareness of being able to transform the school into an educational and growth centre only through an investment in human resources, in their training and above all, in their psychophysical well-being.

The complexity of analysing the phenomenon, therefore, refers to its double value as a factor and, at the same time, triggering situation, also defined as a stressor, and emotional and psychophysical response to situations and events perceived as critical and problematic.

The study demonstrates the importance of analysing dimensions of well-being and discomfort linked to the type of workload. Starting from the results, it is possible to develop, in the future, an improvement plan with those who work in the field in order to encourage health promotion, a necessary prerequisite to the modification of dysfunctional behaviours. Eventually, the evaluative dimension of managers' discomfort is useful and functional in order to promote improvement actions that concretely constitute an opportunity to review the "managerial practices" connected with desirable professional well-being.

Note

The present study was conducted in full collaboration with the authors. However, M. Annarumma wrote *Introduction, Conclusions and Implication*; M.A Formisano wrote *Research results, Research methodology: Research Objectives, Sample Selection, Instrument and Procedures, Data analysis*; I. Tedesco wrote, *Discussion, Research methodology: General Background, Definition of stress, from individual stress to work-relate discomfort, The role of School Manager and complexity leadership*.

Declaration of Interest

The authors declare no competing interest.

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ADAPTING THE ILLINOIS BULLYING SCALE INTO AZERBAIJANI: EXPLORING THE CONNECTION BETWEEN BULLYING, PSYCHOLOGICAL DISTRESS, AND WELLBEING

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Abstract

Bullying is a significant concern in the realm of psycho-social issues today. This study aimed to adapt the Illinois Bullying Scale for use with Azerbaijani adolescents and explore the relationships between bullying, psychological distress, and well-being. The study involved 3,320 Azerbaijani teenagers, comprising 1,882 females and 1,488 males. Various statistical techniques were applied during the adaptation process to assess the measurement's psychometric properties. Confirmatory factor analysis was used to determine its factor structure, concurrent validity was assessed, and reliability analyses were conducted. Mediation analysis was employed to investigate the links between bullying, psychological distress, and well-being. The results from confirmatory factor analysis revealed that the questionnaire, consisting of 18 questions, had a three-dimensional structure and demonstrated a good fit. Additionally, the study found positive relationships between bullying, victimization, fighting, and psychological distress, while these were negatively associated with well-being. Importantly, the findings highlighted that psychological distress acted as a mediator in the impact of bullying sub-dimensions on well-being. Collectively, these results suggest that the Azerbaijani adaptation of the Illinois Bullying Scale exhibits favorable psychometric qualities.

Keywords: bullying scale, psychological distress, mental wellbeing, scale adaptation

Introduction

Over the past few decades, aggression and violence in childhood and adolescence have been subjects of scientific investigation (Horoz et al., 2022; Poling et al., 2019). Research consistently indicates that the occurrence of severe aggression remains relatively stable throughout the transition from childhood to adulthood (Huesmann et al., 2009). However, Loeber and Hay (1997) propose that aggression may initially manifest during the adolescent years.

During adolescence, the significance of relationships with peers, the influence of their opinions, and the pursuit of self-affirmation among peers become prominent (Dornbusch, 1989; Kutuk, 2023). Therefore, the significant impact of peers in facilitating instances of bullying and victimization can be observed through their actions of endorsing the bully, granting them authority, neglecting to intervene, or associating with individuals engaged in bullying behavior (Dornbusch, 1989). When adolescents desire to establish autonomy from their parents, they

frequently rely on their peers as a source of support for addressing issues, expressing emotions, addressing anxieties, and addressing uncertainties. Consequently, the significance of socializing with friends is heightened (Sebald, 1992). The association between the dependence on peers for social support and the heightened pressures to achieve social status has been established (Corsaro & Eder, 1990).

Bullying research has garnered significant interest in recent years due to its impact on the psycho-social development of children and adolescents (Lohmeyer & Threadgold, 2023). Olweus (1991) initially defined bullying as the repeated exposure of an individual to hostile actions by another individual or group, leading to a power imbalance between the bully and the victim. The literature generally identifies four aspects of traditional bullying behavior: intentionality, repetition, power imbalance, and negative affect (Smith, 2014). These aspects encompass specific behaviors such as physical (e.g., kicking), verbal (e.g., using rude words), relational (e.g., gossiping), and cyberbullying (e.g., posting negative comments about someone online). Peer victimization has been found to be significantly correlated with various negative psychological outcomes, including but not limited to psychological distress, anxiety, depression, low self-esteem, psychosis, and even suicide, across diverse age cohorts (Wolke et al., 2013). Moreover, bullying has the potential to result in adverse outcomes such as diminished academic performance and premature discontinuation of formal education (Cornell et al., 2013; Hammig & Jozkowski, 2013).

The intensity of exposure to bullying is a crucial factor influencing the severity of psychological distress and other mental health problems in adolescents. For instance, students who experience repeated victimization report more severe depressive symptoms compared to those victimized only once (Hunter et al., 2007). Frequently victimized students perceive their situation as more threatening and feel less in control of what happens (Hunter et al., 2007). Moreover, witnesses of cyberbullying also experience distress and pressure to respond to incidents (Patterson et al., 2017), although relatively few actively advocate for cyberbullying victims (Sarmiento et al., 2019). Consequently, bullying and cyberbullying affect not only those directly involved but also uninvolved adolescents within the same environment.

Numerous studies have provided evidence supporting the detrimental effects of bullying, specifically cyberbullying, on the mental health of young individuals (Alikasifoglu et al., 2007; Bender & Lösel, 2011; Demir, 2023; Kim, Boyle, & Georgiades, 2017; Nansel et al., 2004). Multiple research studies have documented heightened levels of anxiety, depression, eating disorders, sleep deprivation, contemplation of suicide, and instances of suicide attempts among individuals who have experienced cyberbullying (Fahy et al., 2016; Mateu et al., 2020; Zhu et al., 2021). According to research conducted in Singapore, individuals who experienced cyberbullying reported a higher prevalence of internalizing problems, such as anxiety or depression. Conversely, those who were victims of both traditional bullying and cyberbullying exhibited a greater likelihood of externalizing problems, such as engaging in aggressive behavior (Ong et al., 2021). Research conducted among adolescents in Norway and Finland has identified a correlation between instances of bullying and cyberbullying and the manifestation of psychosomatic symptoms, such as headaches and abdominal pain (Sourander et al., 2010).

Research Problem

The phenomenon of school bullying poses a substantial risk to the overall development and well-being of adolescents, and it has been found to be linked with diminished psychosocial functioning and heightened adjustment difficulties spanning from early childhood to adulthood (Tsang et al., 2012). Although studies on bullying have primarily been conducted in developed countries, there is a need for more information on bullying in developing countries like Azerbaijan. Gaining deeper insights into the prevalence of bullying is particularly crucial in low- and middle-income countries, which often have limited mental health resources and capacity among their healthcare and education systems to prevent and address the consequences of bullying effectively.

Understanding the prevalence and dynamics of bullying in Azerbaijani schools is essential for developing targeted interventions and strategies to address this issue effectively. The goal of

this study was to adapt and validate the Illinois Bullying Scale for use among children and adolescents in Azerbaijani schools. By adapting and validating the Illinois Bullying Scale for use in Azerbaijani schools, this study aims to provide a comprehensive assessment tool that can accurately measure bullying behaviors and victimization experiences among children and adolescents. The findings of this study will not only contribute to the existing body of knowledge on bullying but also provide valuable insights for policymakers, educators, and mental health professionals in Azerbaijan, enabling them to implement evidence-based interventions and support systems to promote a safe and healthy school environment for all students. Ultimately, the successful adaptation of the scale will facilitate the identification and prevention of bullying, leading to improved well-being and academic outcomes for Azerbaijani youth.

Research Focus

The research is centered around adapting the Illinois Bullying Scale for use in the Azerbaijani context. This study delves into a model that examines the intermediary functions of psychological distress in the connection between bullying and well-being.

Research Aim and Research Questions

In recent times, bullying, a subject of extensive research, has been assessed using various measurement tools. The literature reveals that the concept of bullying, which encompasses various definitions and sub-dimensions, is gauged through diverse assessment instruments across different cultures. However, the Azerbaijani literature lacks scale development or adaptation studies on bullying. Hence, this research assesses the validity and reliability of the Illinois Bullying Scale, developed by Bosworth et al. (1999), in the Azerbaijani population. Furthermore, this study explores the relationship between bullying and psychological distress, and well-being. The research questions (RQ) are provided below.

- RQ1. Is the Illinois Bullying Scale adapted for use with Azerbaijani adolescents a valid measurement tool for assessing bullying?
- RQ2. Does the adapted Illinois Bullying Scale demonstrate sufficient reliability?
- RQ3. What is the relationship between bullying and psychological distress, and well-being?
- RQ4. Does psychological distress mediate the relationship between bullying and well-being?

Research Methodology

General Background

The research methodology in this study employed a cross-sectional survey design. The adaptation of the Illinois Bullying Scale for use with Azerbaijani adolescents involved a multi-step process, which included translation and back-translation, expert reviews, and pilot testing. Data were gathered from 3320 adolescents in Azerbaijan through convenience sampling. To assess the psychometric properties of the adapted questionnaire, confirmatory factor analysis, concurrent validity, and reliability analyses were conducted. Using PROCESS mediational analysis, the study examined the correlation between bullying, psychological distress, and well-being. Overall, a quantitative research approach was used in this study to explore the connection between bullying and various psychological outcomes among Azerbaijani adolescents. The data for the study was gathered during the months of August and September in the year 2023.

Sample

A diverse cohort of 3320 adolescents, aged between 10 and 17 years (mean age = 13.13 years, standard deviation = 1.77), formed the subjects of this study. 1832 individuals identified as female, constituting 55.2% of the total, while 1488 participants defined themselves as male, making up 44.8% of the sample. Participants were enrolled in grades ranging from 5 to 11, with an even distribution across all grade levels. When their perceived academic performance was assessed, 67.8% ($n = 2250$) rated it as average, 6.5% ($n = 215$) as low, and the remaining 25.8% ($n = 855$) as high. When birth order was examined, 6.9% ($n = 229$) were only children, 45.5% ($n = 1512$) were first-born, 16.8% ($n = 168$) were middle children, and 30.7% ($n = 1020$) were the youngest siblings. Furthermore, 91.2% ($n = 3027$) of their parents lived together, while 8.8% ($n = 293$) were divorced. When examined from a socioeconomic status perspective, more than half of the participants ($n = 1949$, 58.7%) perceived their status as average, while 5.9% ($n = 194$) considered it low, and 35.5% ($n = 1177$) regarded it as high.

Data collection was conducted through an online survey form, which participants could access with the guidance of school psychologists. The selection of schools for this research adhered to the convenience sampling approach, which provided the research team with the convenience of selecting a readily accessible and relevant sample aligned with the study's goals. School psychologists played a pivotal part in enlisting adolescents from their respective educational institutions and distributed the online survey links that were prepared to the participants.

Instrument and Procedures

The Illinois Bully scale, which was employed to measure self-reported bullying, fighting, and victimization, consisted of 18 items selected based on a comprehensive review of existing bullying and victimization measures. These items were subjected to principal axis factoring (PAF) analysis to determine the underlying factor structure. The analysis revealed three distinct factors, namely the Bullying Scale (nine items), the Fighting Scale (five items), and the Victimization Scale (four items). These factors accounted for 49% of the variance, indicating that they captured a substantial portion of the construct's variability (Bosworth et al., 1999; Crick, 1996).

To assess psychological distress among children and adolescents, the Children and Adolescents Psychological Distress Scale (CAPDS-10) developed by De Stefano et al. (2022) was employed. This scale comprised ten items that measured various distressing experiences, such as feeling down or sad. Participants rated the frequency of these experiences on a 4-point Likert scale, ranging from “absolutely not” to “almost every day.” The internal consistency of the CAPDS-10 items was found to be satisfactory, with a Cronbach's alpha coefficient of .86, indicating a reliable measure of psychological distress (De Stafano et al., 2022). In this study, the Cronbach's alpha reliability coefficient was calculated to be .89.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was used to assess the participants' mental well-being. This scale, developed by Tennant et al. (2007), consists of 15 positively worded items that capture different aspects of mental well-being, such as feeling relaxed. Respondents rated their agreement with each item on a 4-point Likert scale, ranging from “I totally disagree” to “I totally agree.” The WEMWBS has demonstrated good internal consistency, with Cronbach's alpha scores of 0.89 for student samples and 0.91 for population samples, indicating that the scale items effectively measure mental well-being (Tennant et al., 2007). In this study, the Cronbach's alpha reliability coefficient was calculated to be .94.

Data Analysis

In this study, the Illinois Bullying Scale was adapted into the Azerbaijani language, and its three-dimensional structure was subjected to confirmatory factor analysis. The three-dimensional

structure of the adapted Illinois Bullying Scale was examined using confirmatory factor analysis (CFA). CFA was employed to validate the factorial structure of the scale in the Azerbaijani context, ensuring that the three dimensions identified in the original scale align with the data collected in this study. The internal consistency of the adapted scale was assessed using multiple reliability coefficients, including Cronbach's alpha, McDonald's omega, and Guttman's lambda. These coefficients provide insights into the reliability and consistency of the scale's items in measuring bullying behaviors.

To evaluate convergent validity, correlations between the adapted Illinois Bullying Scale and measures of psychological distress, and well-being were examined. This analysis aimed to determine whether the scale exhibits the expected relationships with other psychological constructs, supporting its convergent validity. In addition, the study delved into the mediating role of psychological distress in the association between bullying and mental well-being. Mediation analysis has been conducted to elucidate the extent to which psychological distress explains the relationship between bullying experiences and the mental well-being of participants.

Research Results

Structural Validity Assessment

The evaluation of the structural validity of the Azerbaijani Illinois Bullying Scale unveiled a robust three-factor framework, consisting of domains related to bullying, victimization, and fighting. The presence of substantial factor loadings for all items within the Azerbaijani Illinois Bullying Scale provided compelling evidence to support this structure. This assertion was corroborated by the model's statistical fit indices, including $\chi^2(160, N = 3320) = 2215.65, p < .001$, signifying statistical significance. Furthermore, the model demonstrated acceptable fit across a range of goodness-of-fit indices, such as CFI = 0.90, GFI = 0.93, TLI = 0.90, SRMR = 0.06, and RMSEA = 0.07. Notably, the intercorrelations among the four factors in the model were also significant, which further reinforces the structural validity of the Illinois Bullying Scale.

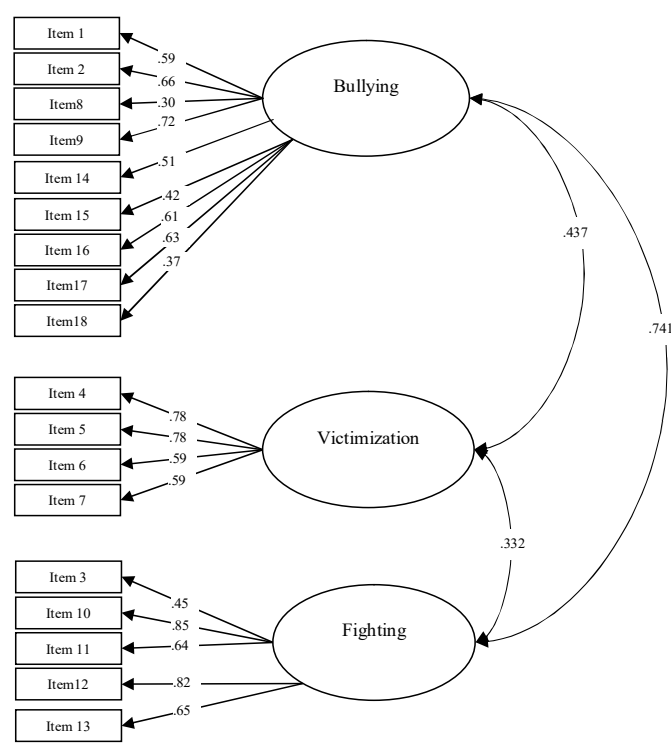
Evaluation of Internal Consistency Reliability

A comprehensive evaluation of the scale's internal consistency reliability was carried out, utilizing three distinct coefficients: Cronbach's alpha, McDonald's omega, and Guttman's lambda. The reliability coefficients for bullying ($\alpha = .745, \omega = .752, \text{ and } \lambda_6 = .793$), victimization ($\alpha = .771, \omega = .793, \text{ and } \lambda_6 = .735$), and fighting ($\alpha = .777, \omega = .820, \text{ and } \lambda_6 = .782$) subscales were found to surpass acceptable levels, indicating robust reliability (refer to Table 1).

Table 1.
Reliability Coefficients for the Illinois Bullying Scale

	Bullying	Victimization	Fighting
Cronbach α	.745	.771	.777
McDonald ω	.752	.793	.820
Guttman λ_6	.793	.735	.782

Figure 1
Confirmatory Factor Analysis of Azerbaijani – Illinois Bullying Scale



Establishing Convergent Validity

To assess the convergent validity of the three factors in the Illinois Bullying Scale – bullying, victimization, and fighting - the study employed two distinct measures as outlined in Table 2: the Child and Adolescent Psychological Distress Scale and the Mental Wellbeing Scale. It's worth noting that all correlation analyses produced statistically significant results ($p < .001$). As anticipated, the factors of the Illinois Bullying Scale exhibited positive correlations with psychological distress (ranging from $r = .286$ to $.443$). Conversely, these factors displayed negative correlations with measures of wellbeing (ranging from $r = -.225$ to $.322$). These findings underscore the convergent validity of the Azerbaijani version of the Illinois Bullying Scale.

Table 2
Convergent Validity of the Illinois Bullying Scale

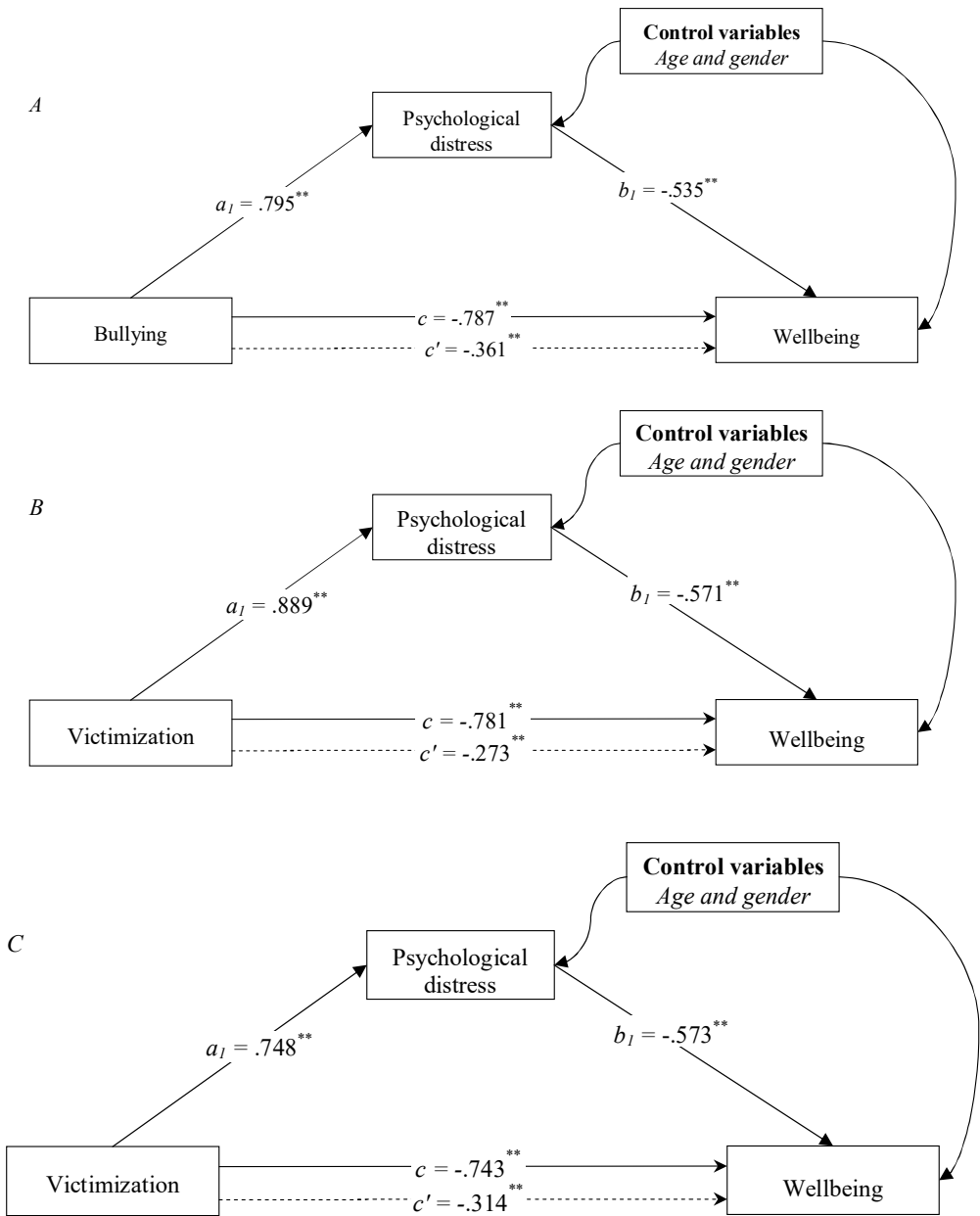
Variable	Bullying	Victimization	Fighting
Psychological distress	.443**	.383**	.286**
Wellbeing	-.322**	-.247**	-.225**

Note. ** $p < .001$

Evaluation of Predictive Validity

A mediation analysis was recently undertaken to assess the predictive validity of the scale. This analysis has employed a bootstrapping method to investigate the extent to which psychological distress mediates the connection between bullying/victimization/fighting and wellbeing. Figure 2 displays the outcomes of the regression paths and the direct impacts that were assessed in the mediation analysis.

Figure 2
Mediational Analysis Results



The investigation encompassed a thorough examination of direct effects, unveiling that bullying exhibited significant negative predictive power in relation to psychological distress ($B = 0.795$, $t = 27.72$, $p < .001$). To validate the indirect effects of bullying on wellbeing through the mediation of psychological distress, a bootstrapping analysis was conducted. The findings confirmed the significant mediating role of psychological distress (bootstrap value = -0.426 , 95%CI = -0.497 , -0.363) in the association between bullying and wellbeing. Victimization had a substantial and negative predictive influence on psychological distress ($B = 0.889$, $t = 25.39$, $p < .001$). The results substantiated the substantial mediating role of psychological distress (bootstrap value = -0.508 , 95%CI = -0.581 , -0.438) in the relationship between victimization and wellbeing. Lastly, fighting exerted a significant and adverse predictive impact on psychological distress ($B = 0.748$, $t = 20.68$, $p < .001$). The findings provided strong support for the substantial mediating role of psychological distress (bootstrap value = -0.429 , 95%CI = -0.495 , -0.369) in the association between fighting and well-being.

Discussion

The research conducted on the adaptation and validation of the Illinois Bullying Scale in the Azerbaijani context revealed important findings regarding the impact of bullying on the mental health of children and adolescents. The study found that bullying was associated with symptoms of anxiety, depression, and stress in this population.

The confirmatory factor analysis (CFA) results indicated that the adapted version of the Illinois Bullying Scale had acceptable fit indices, suggesting that the scale effectively measured bullying, victimization, and fighting among Azerbaijani adolescents. The one-dimensional version of the scale, consisting of 18 items, showed consistency with the original scale and yielded similar results to previous studies (Akbari Balootbangan & Talepasand, 2015; Shujja & Atta, 2011). Additionally, the three dimensions of the scale (bully, victim, and fighter) were confirmed in Azerbaijani adolescents through CFA, demonstrating the applicability of the scale in this population.

Regarding the internal consistency of the Illinois Bullying Scale items, the study reported satisfactory values. Cronbach's alpha coefficient, McDonald's omega, and Gutmann's lambda coefficients indicated acceptable internal consistency aligning with the established guidelines for reliability (Nunnally, 1978).

Convergent validity analyses revealed significant positive correlations between the Illinois Bullying Scale and the Child and Adolescent Psychological Distress Scale, indicating that higher levels of bullying were associated with increased psychological distress. The scale also demonstrated a negative relationship with the Warwick Edinburg Mental Wellbeing Scale, indicating that higher levels of bullying were linked to lower well-being. These findings align with previous research that has consistently shown the detrimental effects of bullying on mental health and well-being (Schneider et al., 2012). The correlations between the three subscales of bullying (bully, victim, and fighter) and stress were also examined.

Furthermore, the research supported the predictive role of the Illinois Bullying Scale, as it found direct associations between bullying and psychological distress. The findings suggested that bullying acts as a risk factor for heightened levels of anxiety, stress, and depression. The existing literature also supports these associations, indicating a direct link between bullying and negative psychological outcomes, as well as an inverse relationship between bullying and wellbeing (Carretero Bermejo et al., 2022).

Overall, the study provided valuable insights into the psychometric properties and validity of the adapted Illinois Bullying Scale in the Azerbaijani context. The findings confirmed the scale's applicability, reliability, and criterion-related validity, highlighting the negative impact of bullying on the mental health and well-being of Azerbaijani children and adolescents. These results contribute to the existing body of scientific literature on the subject, reinforcing the importance of addressing bullying and its consequences for the promotion of positive mental health in this population.

Limitations

It is important to acknowledge the limitations of the study to interpret the results appropriately. The mentioned limitations include the reliance on self-reported surveys, which can be subject to biases such as memory recall and social desirability. These biases may affect the accuracy and reliability of the data collected. Additionally, the study sample being biased towards the female sex raises concerns about the generalizability of the findings to the broader population, as gender differences in bullying and mental health outcomes may exist. Another limitation is the cross-sectional nature of the data, which only allows for associations to be observed and does not establish causal relationships between variables. Longitudinal studies would be needed to provide a more comprehensive understanding of the temporal dynamics between bullying and mental health outcomes.

The lack of test-retest reliability assessment is another limitation to consider. Test-retest reliability would provide information about the stability of the scale over time and the consistency of participants' responses. Lastly, the study did not examine certain types of validity, such as concurrent and divergent validity. These validity assessments would provide additional evidence regarding the scale's ability to measure the intended constructs accurately and differentiate them from unrelated constructs.

32 Conclusions and Implications

This study successfully adapted the Illinois Bullying Scale to Azerbaijani children and adolescents, providing evidence of its validity and reliability for use in Azerbaijan. The findings support the use of this measurement tool in assessing bullying behaviors among Azerbaijani youth. By conducting further research, policymakers, educators, and healthcare professionals can obtain a more comprehensive understanding of bullying and its impact on the well-being of children and adolescents in Azerbaijan. This knowledge can inform the implementation of targeted interventions and support systems to prevent and manage bullying, ultimately fostering a safer and healthier environment for youth.

Declaration of Interest

The authors declare no competing interest.

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TEST ANXIETY AMONG SECONDARY SCHOOL STUDENTS AND UNIVERSITY STUDENTS

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Abstract

The present study aims at comparing test anxiety among secondary school students and university students to reveal if the interventions for reducing test anxiety should be focused more on secondary school students who do not have enough skills for emotional management. The Bulgarian version of the Westside Test Anxiety Scale was used among 60 junior high school/middle school students, 30 high school students and 90 university students. It was found that test anxiety diminished with age advance. Higher test anxiety was manifested during the school/academic year than at the beginning of the school year. The interventions for reducing test anxiety should be focused mainly on overcoming negative thoughts, and negative self-talk during exams, and worry about own performance after the exam.

Keywords: test anxiety, secondary school students, university students

Introduction

Exam situations are an immanent part of the educational process at school and university, and students usually experience some symptoms of test anxiety. Test anxiety is a form of performance anxiety (Moses, 2023) or state anxiety under the specific conditions (Mary et al., 2014) before, during, and after exams (Baghaei & Cassady, 2014) characterized with fear of failure, fear of not performing well, fear of negative evaluation (Moses, 2023; Tzoannopoulou, 2016), worry (Moses, 2023), persistent negative thoughts (Moses, 2023; Pitta, 2021), negative self-talk, problems with attention focus and lack of concentration (Moses, 2023), nervousness (Moses, 2023; Tzoannopoulou, 2016), feeling of tension (Tzoannopoulou, 2016), feeling uneasy about a situation of exam/testing (Moses, 2023), feeling confusion (Pitta, 2021), and some physical symptoms as headache, nausea, accelerated heartbeat, sweating, etc. (Moses, 2023; Pitta, 2021).

It has been established that high test anxiety has a negative effect on students' academic performance (Pitta, 2021) manifested in lower grades/marks achievement (Amalu, 2017; Barik & Barman, 2019; Cassady & Johnson, 2002; Larson et al., 2010; Orakwue & Okigbo, 2023; Papantoniou et al., 2017; Thomas et al., 2018; Tzoannopoulou, 2016) for both secondary and postsecondary students (Cassady & Johnson, 2002). Fear of exams can lead to avoidance of exam situation (Pagaria, 2020), so the student does not attend the exam. It is important to study test anxiety in relation to the factors that may provoke it to find some possibilities for its reduction and diminishment of negative consequences from test anxiety.

Test anxiety may be provoked from the lack of enough preparation (Cassady & Johnson, 2002; Moses, 2023; Pitta, 2021), social pressure and fear of not meeting some expectations (Moses, 2023), parental overprotection (Yang, 2023) or lack of parental support (Pitta, 2021), striving for perfectionism (Baghaei & Cassady, 2014; Moses, 2023; Pitta, 2021), inadequate learning strategies, ineffective coping strategies, especially procrastination (Cassady & Johnson, 2002; Desai et al., 2021; Moses, 2023; Pitta, 2021), time pressure (Moses, 2023) and poor time management (Pitta, 2021), negative past experiences related to exam situations, the importance of exam consequences, negative social comparison (Moses, 2023), low self-esteem (Moses, 2023; Pitta, 2021), feeling of inferiority (Pitta, 2021), low self-confidence (Moses, 2023) for a specific task (Cassady & Johnson, 2002), unfamiliar test formats (Moses, 2023), high trait anxiety (Burhan et al., 2020; Cassady & Johnson, 2002; Moses, 2023), high generalized anxiety (Moses, 2023), high state anxiety in situations of communication with teachers (Topova, 2023), high state anxiety in situation of answering questionnaires (Mur et al., 2022), pessimism and feeling of hopelessness (Moses, 2023; Pitta, 2021), lack of control over the exam process (Pitta, 2021), etc.

The scientific studies usually report that test anxiety is higher in female students compared to male students (Baghaei & Cassady, 2014; Baig et al., 2018; Balogun & Olanrewaju, 2016; Barik & Barman, 2019; Cassady & Johnson, 2002; Pagaria, 2020; Pitta, 2021; Yarkin et al., 2023) in different educational degrees.

It may be expected that with the advance of age and accumulated experience of coping with exam situations test anxiety would be reduced, so the interventions and techniques for reducing test anxiety should be focused mainly on secondary school students than on university students. However, there is a shortage of studies focused on exam anxiety both among secondary school students and university students. Conducting a literature review, only one study was found to compare the levels of test anxiety among secondary school students and university students. In a study in China of 200 students from 11 to 22 years old, the highest level of test anxiety was among the secondary school students at high school, followed by the degree of expression of test anxiety in the university students and the lowest test anxiety was among the secondary school students at junior high school/middle school (Yang, 2023).

Test Anxiety among Secondary School Students

Some other studies also report high test anxiety among secondary school students in different parts of the world. In a study among 46 secondary school students between the ages of 14–18 in Nigeria, 71.7% of them had high test anxiety (Dami et al., 2019). Among 600 higher secondary school students studying in their final year of secondary education in India, 46.3% had high test anxiety and 36.7% had low test anxiety (Goswami & Roy, 2017). A group of 100 students from 10th to 12th grades aged 15-18 years old in India had an increased level of anxiety three months prior to exams, particularly higher in the 12th school year (Mary et al., 2014) that may be due to the important consequences from the exams for further educational development. The secondary school students in their final year of study experience higher test anxiety due to the high stakes and the only chance to pass the maturity exam (Kolev, 2020).

Another part of the studies reported the prevalence of medium/moderate test anxiety among the secondary school students. In a study of 698 secondary school students in Turkey from 9 to 12 grades, most of them had mid-level test anxiety (Gürses et al., 2010). Test anxiety of 74.10% of 332 secondary school students in India is moderate (Barik & Barman, 2019). Some cultural specificities, different state policies regarding the educational systems and conducting studies in different time periods of the school year may explain some discrepancies in the research findings concerning the most frequent levels of test anxiety among secondary school students. However, no studies were found to report the most frequent low levels of test anxiety among the secondary school students.

Test Anxiety among University Students

Regarding test anxiety of university students, it seems that it depends on their specialty. For example, the university students in the nursing specialty have high test anxiety (Moore, 2013). The university students who studied medical sciences had higher levels of test anxiety than students who studied psychology in the Republic of Northern Macedonia (Stankovska et al., 2018). A study among 220 undergraduate and postgraduate physiotherapy students from colleges in India established a prevalence of moderately high test anxiety among the students in different years of education (Desai et al., 2021).

A study in Iraq among 70 university students of diverse specialties established the opposite trend – half of them had mild levels of test anxiety, while 27.1% had a high level of test anxiety (Khalaf & Halboos, 2020). It may be expected that university students from a variety of specialties would have mainly medium levels of test anxiety as most social phenomena are widespread in their medium degree in norm-based testing (Anastasi & Urbina, 1997).

Hypotheses

It was expected that test anxiety would diminish with age advance because of the accumulation of more experience with testing and examinations, i.e., the secondary school students should have higher test anxiety than university students, and junior high school/middle school students should have higher test anxiety than high school students who should have higher test anxiety than university students.

It was supposed that higher test anxiety would be manifested during the school/academic year than at the beginning of the school year. At the beginning of the school year, the exams have not started yet, while the course of the school year is a period of regular exams.

Research Methodology

Procedure

A cross-sectional study was conducted both paper-and-pencil and online at the beginning of the school/academic year (before exams) and during the school/academic year 2022/2023.

Sample

Participation was voluntary and anonymous. Purposeful sampling was applied and the criterion for selection was being a secondary school or university student.

In Bulgaria, 180 students from 11 to 29 years old (mean age = 18.68 years old, $SD = 6.3$, median = 17 years) were studied by means of WTAS. They were distributed into three age groups: 11-13 years old, studying in junior high school/middle school ($N = 60$, 33.3%), 14-18 years old, studying in high school ($N = 30$, 16.7%), and 19-29 years old, studying in university ($N = 90$, 50%).

The secondary school and university students were equal – 90 students in each group. The studied university students were mainly in their third year of studies ($N = 42$; 23.3%), followed by the students in their second year of studies ($N = 30$; 16.7%) and the studied students in their first year of studies ($N = 18$; 10%). They studied in diverse specialties.

More female students ($N = 170$; 59.4%) were studied than male students ($N = 73$; 40.6%). More students were tested during the school/academic year ($N = 133$; 73.9% out of which 59 male students and 74 female students) than at the beginning of the school/academic year ($N = 47$; 26.1% out of which 14 male students and 33 female students).

Instruments

The Westside Test Anxiety Scale - WTAS (Driscoll, 2007) was used for this study. It is a self-report 10-item scale that measures students' test anxiety because of events before, during, and after

an exam on a five-point Likert scale (Dami et al., 2019; Maswood et al., 2019; Pagaria, 2020; Talwar et al., 2019). There is not any reverse-coded item on WTAS (Yatkin et al., 2023). After summing up the scores on each item, the total score is divided by the number of all items in WTAS and then distributed into six categories with different degrees of test anxiety from low to extremely high test anxiety (Baig et al., 2018; Desai et al., 2021; Driscoll, 2007; Larson et al., 2010; Talwar et al., 2019). A higher score on WTAS means a higher test anxiety level (Yatkin et al., 2023).

Its items measure emotional agony (Talwar et al., 2019), worry, catastrophizing, some difficulties in cognitive processing, incapacity, cognitive dysfunction like problems with concentration and memory loss which can impair performance (Baig et al., 2018; Crawford, 2021; Kubala, 2021; Larson et al., 2010; Pagaria, 2020; Talwar et al., 2019; Ward & Smith, 2019).

Cronbach's alpha ranged between 0.80–0.90 in different studies (Dami et al., 2019; Maswood et al., 2019; Talwar et al., 2019), even 0.91 (Yatkin et al., 2023). In Bulgaria, its Cronbach's alpha is .834, and its Guttman split-half reliability coefficient is 0.880 (Relajo-Howell & Stoyanova, 2019).

Socio-demographic information was also collected.

Data Analysis

Data were processed statistically by means of the software SPSS 23. Descriptive statistics were applied, as well as Shapiro-Wilk test of normality of distribution, chi-square analysis, Kruskal – Wallis test and Mann-Whitney *U* test for group comparisons, and Spearman's rho correlation coefficient for establishing some connections between different variables.

Research Results

The participants' mean score on test anxiety was 3.318 and the standard deviation was 0.612, i.e., slightly more than half of the scores varied between high normal test anxiety through moderately high anxiety to high test anxiety (see Table 1).

Table 1
Frequency Distribution of Levels of Test Anxiety

Levels of test anxiety	Frequency	Percent
Comfortably low test anxiety	26	14.4
Normal or average test anxiety	44	24.4
High normal test anxiety	38	21.1
Moderately high (some items rated 4=high)	30	16.7
High test anxiety (half or more of the items rated 4=high)	24	13.3
Extremely high anxiety (items rated 4=high and 5=extreme)	18	10.0

Age was not normally distributed (Shapiro-Wilk coefficient = 0.829, *df* = 180, *p* < .001). The scores on WTAS were not normally distributed (Shapiro-Wilk coefficient = 0.981, *df* = 180, *p* = .015).

Age advance was related to diminishment in test anxiety (Spearman's rho = -0.643, *p* < .001, *N* = 180) for the whole sample and this trend was more strongly expressed for the female students (Spearman's rho = -0.652, *p* < .001, *N* = 107) than for the male students (Spearman's rho = -0.586, *p* < .001, *N* = 73).

The studied secondary school students had higher test anxiety than the studied university students (see Table 2), and the effect size was large, according to Lenhard & Lenhard (2022). The studied secondary school male students (*N* = 44, mean rank = 47.27, *M* = 3.166, *SD* = 0.541) had higher test anxiety (Mann-Whitney *U* = 186, *p* < .001, Effect size Eta squared η^2 = 0.356) than the studied university male students (*N* = 29, mean rank = 21.41, *M* = 2.256, *SD* = 0.513), and the effect size was large, according to Lenhard & Lenhard (2022). The studied secondary school female students (*N* = 46, mean rank = 79.46, *M* = 3.463, *SD* = 0.645) had higher test anxiety (Mann-Whitney

$U = 232, p < .001$, Effect size Eta squared $\eta^2 = 0.507$) than the studied university female students ($N = 61$, mean rank = 34.80, $M = 2.355$, $SD = 0.638$), and the effect size was large, according to Lenhard & Lenhard (2022).

Table 2
Comparison between the Secondary School Students and the University Students on their Scores on WTAS

Students	N	Mean Rank	M	SD	Mann-Whitney U	p	Effect size Eta squared (η^2)
Secondary school students	90	125.96	3.318	0.612	858.500	< .001	0.463
University students	90	55.04	2.288	0.555			

Significantly more secondary school students than expected ($\chi^2_{(N=180, df=5)} = 88.791, p < .001$, Cramer's $V = 0.702$, i.e., large/strong effect size, according to IBM, 2023) had extremely high test anxiety, high test anxiety and moderately high test anxiety (see Table 3). Significantly more university students than expected had comfortably low test anxiety, normal or average test anxiety, and high normal test anxiety (see Table 3).

Table 3
Comparison between the Secondary School Students and the University Students on Their Levels of Test Anxiety

Students	Frequencies	Levels of test anxiety					
		Comfortably low test anxiety	Normal or average test anxiety	High normal test anxiety	Moderately high test anxiety	High test anxiety	Extremely high test anxiety
Secondary school students	Count	2	9	13	26	24	16
	Expected Count	13.0	22.0	19.0	15.0	12.0	9.0
	% within secondary school students	2.2	10.0	14.4	28.9	26.7	17.8
University students	Count	24	35	25	4	0	2
	Expected Count	13.0	22.0	19.0	15.0	12.0	9.0
	% within university students	26.7	38.9	27.8	4.4	0.0	2.2

Test anxiety was higher among the studied junior high school/middle school students (11-13 years old), followed by test anxiety in high school students (14-18 years old) and the lowest test anxiety was among the university students (19-29 years old), and the effect size was large, according to Lenhard & Lenhard (2022) – see Table 4. The studied junior high school/middle school students (11-13 years old) did not differ statistically significantly in their test anxiety compared to the studied high school students (14-18 years old) (Mann-Whitney $U = 697, p = .082$). The studied junior high school/middle school students (11-13 years old) had significantly higher test anxiety than the studied university students (Mann-Whitney $U = 449.500, p < .001$, effect size Eta squared $\eta^2 = 0.497$, i.e., large effect size, according to Lenhard & Lenhard, 2022). The studied high school students (14-18 years old) had significantly higher test anxiety than the studied university students (Mann-Whitney $U = 409.000, p < .001$, effect size Eta squared $\eta^2 = 0.271$, i.e., large effect size, according to Lenhard & Lenhard, 2022).

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Table 4
Comparison between the Junior High School Students, High School Students and the University Students on Their Scores on WTAS

Students	N	Mean Rank	M	SD	Kruskal-Wallis coefficient (df = 2)	p	Effect size Eta squared (η^2)
Junior high school/middle school students (11-13 years old)	60	131.39	3.403	0.564	85.513	< .001	0.472
High school students (14-18 years old)	30	115.10	3.147	0.675			
University students (19-29 years old)	90	55.04	2.288	0.555			

Significantly more junior high school/middle school students (11-13 years old) than expected ($\chi^2_{(N = 180, df = 10)} = 91.113, p < .001$, Cramer's $V = 0.503$, i.e., large/strong effect size, according to IBM, 2023) had extremely high test anxiety, high test anxiety and moderately high test anxiety (see Table 5). Significantly more high school students (14-18 years old) than expected had high test anxiety and moderately high test anxiety (see Table 5). Significantly more university students (19-29 years old) than expected had comfortably low test anxiety, normal or average test anxiety, and high normal test anxiety (see Table 5).

Table 5
Comparison between the Junior High School Students, High School Students and the University Students on Their Levels of Test Anxiety

Age groups	Frequencies	Levels of test anxiety					
		Comfortably low test anxiety	Normal or average test anxiety	High normal test anxiety	Moderately high	High test anxiety	Extremely high anxiety
11-13 years old	Count	0	5	8	18	17	12
	Expected Count	8.7	14.7	12.7	10.0	8.0	6.0
	% within 11-13 years old	0.0	8.3	13.3	30.0	28.3	20.0
14-18 years old	Count	2	4	5	8	7	4
	Expected Count	4.3	7.3	6.3	5.0	4.0	3.0
	% within 14-18 years old	6.7	13.3	16.7	26.7	23.3	13.3
19-29 years old	Count	24	35	25	4	0	2
	Expected Count	13.0	22.0	19.0	15.0	12.0	9.0
	% within 19-29 years old	26.7	38.9	27.8	4.4	0.0	2.2

Test anxiety at the beginning of the school year was significantly lower than test anxiety during the school year (see Table 6) and the effect size was large, according to Lenhard & Lenhard (2022). The mean score on WTAS at the beginning of the school year corresponded to normal or average test anxiety, according to Driscoll (2007) and Relajo-Howell & Stoyanova (2019). The mean score on WTAS during the school year corresponded to high normal test anxiety, according to Driscoll (2007) and Relajo-Howell & Stoyanova (2019).

Table 6
Comparison between the Students Tested at the Beginning of the School Year and the Students Tested during the School Year on Their Scores on WTAS

Students	N	Mean Rank	M	SD	Mann-Whitney U	p	Effect size Eta squared (η^2)
Tested at the beginning of school year	47	54.50	2.302	0.534	1433.500	< .001	0.169
Tested during the school year	133	103.22	2.98	0.776			

Significantly more students than expected ($\chi^2_{(N=180, df=5)} = 35.720, p < .001$, Cramer's $V = 0.445$, i.e., moderate effect size, according to IBM, 2023) tested at the beginning of the school year had comfortably low test anxiety and normal or average test anxiety (see Table 7). Significantly more students than expected tested during the school year had extremely high levels of test anxiety, high test anxiety or moderately high test anxiety (see Table 7).

Table 7
Comparison between the Students Tested at the Beginning of the School Year and during the School Year on Their Levels of Test Anxiety

Students	Frequencies	Levels of test anxiety					
		Comfortably low test anxiety	Normal or average test anxiety	High normal test anxiety	Moderately high test anxiety	High test anxiety	Extremely high test anxiety
tested at the beginning of school year	Count	11	23	9	3	0	1
	Expected Count	6.8	11.5	9.9	7.8	6.3	4.7
	% within tested at the beginning of school year	23.4	48.9	19.1	6.4	0.0	2.1
tested during the school year	Count	15	21	29	27	24	17
	Expected Count	19.2	32.5	28.1	22.2	17.7	13.3
	% within tested during the school year	11.3	15.8	21.8	20.3	18.0	12.8

The biggest differences (as p – values and effect size) between the studied secondary school students (including between middle high school and high school) and university students, as well as between the beginning and the course of the school year were related to the answers to the 3rd and 9th items of WTAS, i.e., negative thoughts, negative self-talk during exams and anxiety, worry about own performance after the exam.

Discussion

The results supported the hypothesis that test anxiety would diminish with age advance. The same trend was found both for the studied male and female students. This finding may be due to the improved skills for self-control, emotional control with age advance (Mihaylova, 2020) and the accumulation of more experience with testing and examinations. The same explanations are relevant to the result that the secondary school students had higher test anxiety than university students. The same trend was found both for the studied male and female students at secondary school and at university.

It was found that the studied Bulgarian junior high school/middle school students did not differ statistically significantly in their test anxiety compared to the high school students, but there was a trend for higher test anxiety among junior high school/middle school students than among high school students. Both junior high school/middle school students and high school students had higher test anxiety than university students. This result corresponds to the finding by Yang (2023) that Chinese secondary school students at high school had higher levels of test anxiety than Chinese university students, but it differs from the finding by Yang (2023) that Chinese junior high school/middle school students had lower levels of test anxiety than Chinese high school students. This difference may be due to different time periods of conducting both studies in the course of the school year, as well as to some specificity of the culture and educational system.

The findings supported the hypothesis that higher test anxiety would be manifested during the school/academic year than at the beginning of the school year. At the beginning of the school year, the exams have not started yet, while the course of the school year is a period of regular exams that strengthens apprehension related to exams.

Limitations

Some limitations of the study could be related to the sample size. A representative sample with repetitive measures during the school/academic year would give a more detailed picture of the levels of test anxiety in different sub-groups of students. The format of testing may influence the results because it was found in two studies that test anxiety was higher for students examined by pen and paper than for students examined by means of computers/online (Baig et al., 2018; Cassady & Gridley, 2005). The present study used both methods for data collection, and they could have strengthened the effect of individual differences between the students.

Social desirability could also have been manifested in the participants' answers, but the consistency of the findings from the current research with some previous research findings could be evidence for sincere answering. There is also a risk of negative emotional states during the moment of testing when the participants answered how they felt before, during and after an exam situation.

Directions for Further Research

This research was one of the few studies found in the scientific literature that compared test anxiety among students in different educational degrees and in two different periods of the school/academic year – its beginning and its course. Some further studies may focus on cross-cultural comparisons in test anxiety and longitudinal organisation of the study during different stages of the school/academic year. Some further studies may clarify such contradictory research findings as stating that urban secondary school students had higher test anxiety than rural secondary school students in India (Rajasekaran, 2016) and later stating that test anxiety is higher among rural students than among urban students in India (Barik & Barman, 2019).

The findings from this study suggest that the interventions for reducing test anxiety should be focused mainly on secondary school students. The interventions for reducing test anxiety should be focused mainly on overcoming their negative thoughts, and negative self-talk during

exams, and worry about their own performance after the exam. Such techniques as expressive writing (Lang & Lang, 2011; Relajo-Howell & Stoyanova, 2019), relaxation interventions like elevator breathing and guided relaxation (Larson et al., 2010), mindfulness and meditation activities (Duraku et al., 2023), practising of sport and physical exercises, music therapy (Ward & Smith, 2019) have been proven their effectiveness for diminishing test anxiety among students with higher test anxiety and they are appropriate even for younger students. Such types of interventions are focused mainly on how students see themselves and another effective type of intervention should be related to the change of some social and physical characteristics of the school that also affect test anxiety, according to Sari & Anil (2022). Creating a positive psycho-climate at school by means of constructive encouragement and emphasizing the students' strengths in a cosy and beautiful surrounding, may contribute to experiencing positive emotions by students and reducing their test anxiety.

Conclusions

A comparison of test anxiety among students in different educational degrees and in the beginning and during the course of the school/academic year suggested that the interventions for reducing test anxiety should be focused mainly on secondary school students during the school year to overcome their negative thoughts, and negative self-talk during exams, and worry about own performance after the exam. The beginning of the school/academic year was characterized by lower test anxiety because the exams had not started yet. At the start of the school/academic year, the positive emotions from sharing memories about the summer holiday when meeting classmates again should prevail. The exams are an immanent part of the educational process throughout the school year, so test anxiety was more frequently experienced during the course of the school year.

It was found that the manifestations of test anxiety during and after the exam differed for the studied secondary school students and the studied university students. However, apprehension about an approaching exam was similar among both secondary school students and university students. Test anxiety of secondary school students was more expressed in the form of negative thoughts, negative self-talk during the exams and worry about their own performance after the exam than for the studied university students. The university students have successfully passed more exams than the secondary school students, and the confidence in their own ability to cope with the exams may have diminished the university students' negative self-talk during the exams. Besides, the possibility of attending two or three times the same exam may have also reduced worry about their own performance after the exam among the university students.

Accumulating experience, mastering self-control, building self-confidence, interacting in a positive psycho-climate, constructive encouragement emphasizing the students' strengths in a cosy and beautiful surrounding, may contribute to experiencing positive emotions by students, increasing their positive self-talk, and reducing their test anxiety.

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A REVIEW OF THE LITERATURE ON HIV AND NEUROPSYCHOLOGICAL FUNCTIONING IN OLDER ADULTS: IS MORE RESEARCH NEEDED?

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Abstract

The increase in the number of ageing people living with HIV and the documented neurocognitive impairments have highlighted the need to illuminate the existing findings and evaluate the impact that HIV has on older individuals.

A review of the evidence for neuropsychological declines in memory, executive functions, attention and language in people aged 60 years or more was conducted. The databases MEDLINE, PsychINFO and Pubmed were searched for eligible studies based on keywords.

Eight studies of low to high quality that looked at HIV+ older adults (≥ 60) were identified. The majority of older HIV+ adults experienced severe declines in all the cognitive domains under study. There were mixed results regarding the association among advancing age, functioning decline and HIV. Comparisons between HIV-infected and HIV-uninfected older adults showed that HIV+ subjects demonstrate higher scores of cognitive decline in memory, attention, language and executive functions. Further, comparisons among HIV+ adults, demographically matched individuals with mild cognitive impairment of the Alzheimer's type and healthy controls demonstrated that both disease groups perform worse, but the Alzheimer's type group reports a greater decline in memory and language.

Neuropsychological functioning in HIV+ adults presents great decline but studies on this population are limited. As individuals with HIV are increasingly living longer, studies should pay attention to these individuals and examine predictors of neuropsychological decline in the face of well-controlled interventions and treatments.

Keywords: HIV, memory, neuropsychological function, executive functions, older adults

Introduction

Ageing with Human Immunodeficiency Virus (HIV) is a growing global concern, as the population of older individuals with HIV is steadily increasing. Between 2011 and 2016, there was a significant 57% increase in HIV prevalence among individuals aged 65 and older, while

in 2015, 47% of those affected were over 50 (Centers for Disease Control and Prevention, 2018). Older HIV-infected individuals, especially those over 40, are estimated to have twice the risk of HIV-associated cognitive impairments (CI) and an 18% increase in the likelihood of developing cognitive deficiencies every ten years (Coban et al., 2017).

Neurocognitive impairment stands out as a prevalent syndrome among older individuals living with HIV, significantly impacting their quality of life. Studies from the USA have revealed an alarming 58% increased risk of dementia in this population, despite them receiving antiretroviral therapy (ART). What's concerning is that these individuals are diagnosed with dementia around the age of 67, a significantly younger age compared to those without HIV, typically diagnosed at 78 years old (Heaton et al., 2010). Remarkably, even with undetectable viral loads at the time of dementia diagnosis, a staggering 91% of individuals with HIV had progressed to this cognitive impairment (Lam et al., 2021). Another study, the AIDS Clinical Trials Group Longitudinal Linked Randomised Trials study, found that around 26% of participants showed cognitive impairment during their initial neuro-screening (Robertson et al., 2007). It's evident that neurocognitive impairment in individuals with HIV is a widely prevalent yet often overlooked issue.

HIV-associated Neurocognitive Disorder (HAND) stands out as a prevalent source of cognitive impairment in individuals living with HIV (Saylor et al., 2016). It's diagnosed by excluding pre-existing neurobehavioral conditions or strong confounding factors that might influence those with HIV (Chan & Wong, 2013). This disorder progresses through three stages of cognitive impairment: asymptomatic neurocognitive impairment, mild neurocognitive disorder, and HIV-associated dementia (Antinori et al., 2007). Understanding the root cause of HAND remains challenging due to its diagnostic intricacies and the varied ways it manifests (Olivier et al., 2018). However, it's believed that HIV infiltrates the central nervous system (CNS) during the infection phase, where it persists, replicates within resident immune and supporting cells, and triggers the host's immune response, leading to inflammation and cellular damage (Olivier et al., 2018). Despite effective peripheral viral suppression through combination antiretroviral therapy (cART), chronic inflammation and viral activity within the CNS can disrupt the endothelial barrier and neural pathways, contributing to milder forms of HAND (de Almeida et al., 2018). Moreover, individuals' genetic makeup differences may influence how effectively their immune system responds, affecting their susceptibility to HAND. This complexity in the interplay of viral activity, immune response, and genetic factors contributes to the vulnerability of individuals to HIV-associated neurocognitive disorders.

Several contributing factors, beyond just HIV infection, play a role in this impairment, challenging the conventional screening criteria used in the general population. Healthcare providers attending to older individuals with HIV often lack training in assessing and managing the specific needs associated with this geriatric syndrome (Siapera et al., 2018). Conversely, geriatricians might not be well-versed in the unique care requirements of older individuals with HIV. This impairment often likened to a pervasive fog affecting every aspect of life, presents with associated behavioural and psychological symptoms that severely hinder self-care and the management of daily activities (Alford et al., 2022). Consequently, it exerts a detrimental impact on both physical and mental health, undermining self-awareness, self-control, and ultimately reducing social connections. This ripple effect extends to employment stability, chronic medical condition management, and adherence to medications, posing significant challenges for individuals living with HIV (Ng et al., 2023). The absence of comprehensive care tailored to their specific needs exacerbates the issue, resulting in substandard care and poorer health outcomes.

Despite the introduction of cART, the incidence of HIV-associated neuropsychological abnormalities remains common. Verbal memory declines in older HIV+ individuals have been associated with age and HIV (Seider et al., 2014). Additionally, older HIV+ individuals exhibit higher scores of cognitive declines in memory, attention, language, and executive functions compared to their younger HIV+ counterparts. For every 1-year increase in age, there are 1.11-fold higher odds of a memory deficit (Tan et al., 2013). However, some studies have raised questions about whether HIV-related cognitive declines are solely an outcome of older age (Seider et al., 2015; Valcour et

al., 2010). Yet, it is not firmly established to what extent ageing accelerates HIV-associated neuropsychological functioning.

This systematic review aimed to collect and compare current scientific findings in the literature regarding four key areas of neuropsychological functioning (memory, executive functions, attention, and language) in HIV-infected older individuals. Understanding the neuropsychological effects of HIV is a critical research priority, especially in older people, where age increases the risk of both neurocognitive impairment and age-associated neurodegenerative diseases. Therefore, a comprehensive synthesis of existing evidence on neuropsychological functioning in older adults with HIV is essential to inform the clinical and research community.

Research Methodology

Search Strategy and Inclusion Criteria

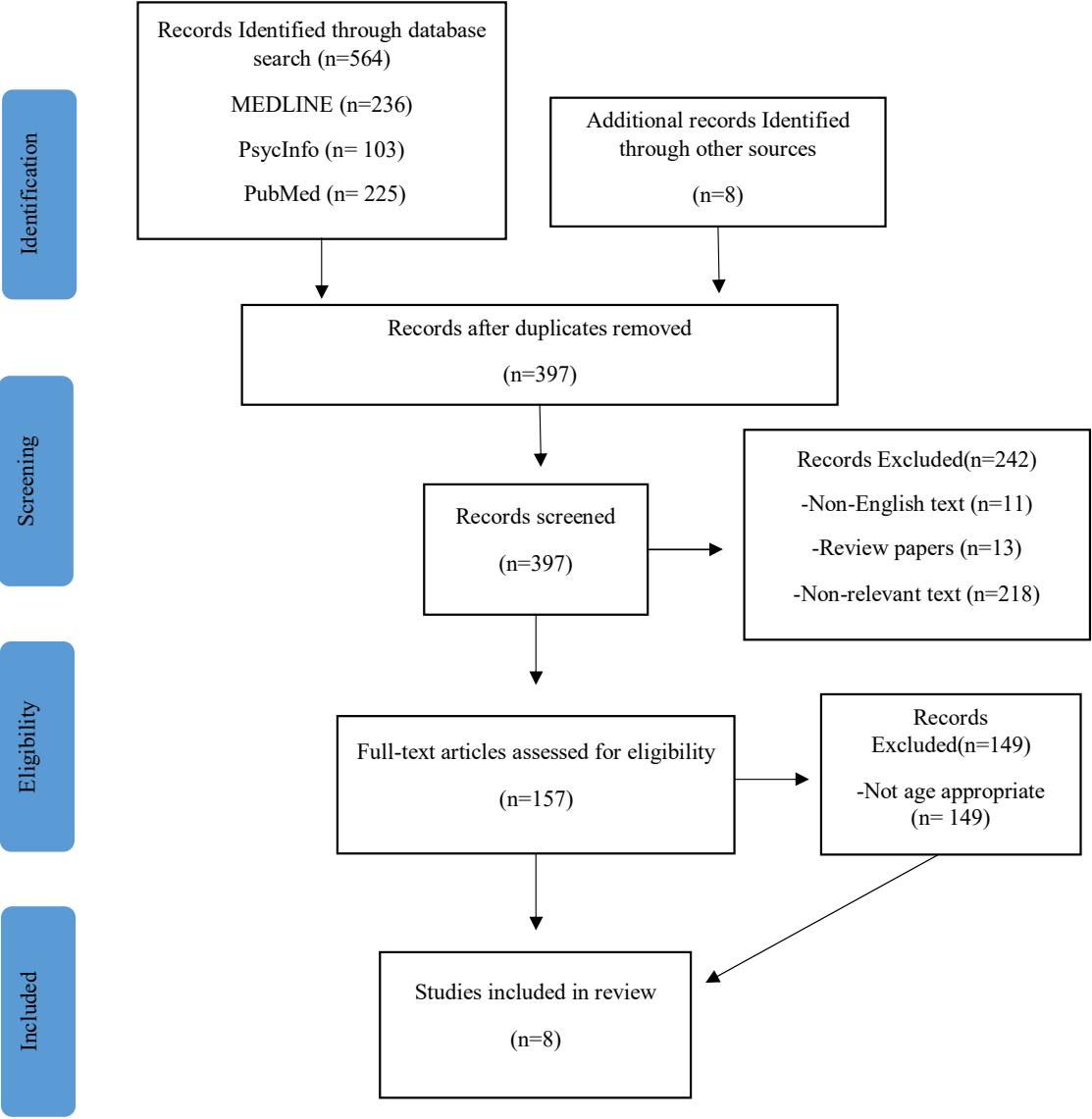
Literature searches were conducted in three major databases (MEDLINE, PsycINFO, and PubMed) up to August 2021 using keywords such as ‘older adults,’ ‘HIV in older adults,’ ‘memory,’ ‘language,’ ‘executive functions,’ ‘attention,’ and ‘neuropsychological functioning.’ After completing the literature search, duplicate entries were removed.

In terms of inclusion criteria, studies that addressed the neuropsychological effects of HIV were included in our sample if they met the following criteria: (i) the sample included individuals aged ≥60 years, as this is the commonly used age cut-off in research; (ii) the studies were written in English; and (iii) they were published within the last 10 years to ensure the most recent recommendations were considered. Research papers were included, while reviews, commentaries, editorials, and case studies were excluded. Studies without full-text availability were also excluded. Additionally, relevant studies were identified by screening the reference lists of the papers obtained from the databases.

Study Selection and Data Extraction

A two-step strategy was employed to assess the relevance of the search results. Initially, one reviewer independently evaluated the references based on their titles and abstracts, applying the inclusion criteria. The reference lists of the included articles were also manually searched. Subsequently, after excluding non-relevant records, the full texts were analysed to determine the eligibility of the remaining records, and key findings were highlighted by the same reviewer. Demographic details of the sample, including the year of publication, type of neurocognitive function measured, number of participants, patient demographics, reported outcomes, and methodological strengths and limitations, were recorded in a data extraction Excel form. Any questions or disagreements regarding relevant references were discussed and resolved with the consultation of a second reviewer.

Figure 1
Identification Strategy and Included Articles



Assessment of Quality

The validated Standard Quality Assessment criteria guidelines were used to evaluate the quantitative papers (Ciccarelli et al., 2017). Fourteen items are scored depending on the degree to which the specific criteria are met (yes = 2, partial = 1, no = 0). Items not applicable to a certain study were marked 'n/a' and excluded from the total calculation. The total is expressed as an overall percentage.

Research Results

The initial analysis search yielded 564 articles. After excluding duplicates and studies on younger samples, fifty full texts were reviewed of which forty-two were excluded as they did not meet the eligibility criteria for the age. Thus, eight full-text studies which assessed 812 HIV+ older individuals (≥ 60) were included.

Table 1
Summary of Key Characteristics of Included Studies

Study	HIV+ Participants	Mean Age
Milanini et al. 2019	61	64
Watson et al. 2017	65	63
Xiao et al. 2019	250	66
Milanini et al. 2016	60	66
E Silva et al. 2011	8	71
Ciccarelli et al. 2017	22	70
Hellmuth et al. 2018	1	79
Ding et al. 2017	345	66

Memory

Cognitive changes in memory domains were extensively documented in seven studies. Milanini et al. (2019) conducted a cross-sectional study comparing 61 virally suppressed older adults with HAND, 53 demographically matched individuals with mild cognitive impairment of the Alzheimer’s type (MCI-AD), and 89 healthy controls over a 20-month period. The results showed that both disease groups performed worse on memory tasks compared to controls. Notably, MCI-AD participants exhibited more significant memory deficits than HAND individuals ($p=.002$). In 2017, researchers investigated memory decline among various groups, including 22 HIV+ adults (aged ≥ 60), 31 younger HIV+ individuals (aged <60), 18 participants with Alzheimer’s Disease (AD), 23 subjects with Parkinson’s Disease (PD), and 28 healthy subjects (Ciccarelli et al., 2017). The study found that the HIV+ group aged 60 and above had a memory profile similar to that of PD participants but performed worse compared to younger HIV+ individuals. However, the study did not confirm a significant interaction between age and HIV.

An additional study confirmed declines in episodic and working memory in HIV+ adults over the age of 60 (Milanini et al., 2016). Furthermore, Watson et al. (2017) aimed to illustrate the difference in memory between HIV+ adults and HIV-uninfected individuals. They recruited 65 HIV+ participants over the age of 60 and 29 demographically matched HIV-uninfected individuals. After completing the UCSF Memory and Aging Center Bedside Screen, the HIV+ group displayed a more significant decline in memory (difference = $-.942$, $p<.001$) (Watson et al., 2017). Supporting these findings, a study in China confirmed that HIV-infected patients were more likely to exhibit memory impairments compared to HIV-uninfected individuals (Ding et al., 2017). In a smaller sample of seven individuals over the age of 70, researchers identified mild dementia with psychiatric alterations, including cognitive symptoms like impaired working memory and compromised immediate and delayed memory. However, recognition memory remained intact (e Silva et al., 2011). Similarly, when Hellmuth et al. (2018) reported the case study of a 79-year-old man with a diagnosis of HIV-associated dementia (HAD), they documented significant difficulties in verbal and visual episodic memory. Despite the initiation of ART treatment, his cognitive abilities progressively declined, and marked dysfunction in memory domains was observed.

Executive Functions

Six studies reported on executive functions among older HIV+ adults (e Silva et al., 2011; Hellmuth et al., 2018; Milanini et al., 2016, 2019; Watson et al., 2017; Xiao et al., 2020). Two of the studies, which employed the Mini-Mental State Exam (MMSE) in their sample of HIV+ adults aged over 70, reported substantial difficulties in executive functions (e Silva et al., 2011; Hellmuth et al., 2018). An additional study observed a higher proportion of pathological performances (27%, $n=16$) in executive functions when using the Multiple Features Target Cancellation (MFTC) (Milanini et al., 2016). Furthermore, in a Chinese sample where cognitive function was assessed using the Bei-

ging version of the Montreal Cognitive Assessment (MoCA), executive functions showed a decline. However, men and those with higher education scored better (Xiao et al., 2020). In a comparison of HIV adults over 60 with demographically matched HIV-uninfected controls, the HIV+ group performed worse on executive functioning (difference = -.665, $p < .001$) (Watson et al., 2017). Lastly, when HIV+ adults were compared with demographically matched individuals with mild cognitive impairment of the Alzheimer's type, both groups scored lower compared to controls. Surprisingly, they performed similarly on executive functions ($p = .265$) (Milanini et al., 2019).

Attention

Attention was also measured in most of the included studies, with findings documented in seven papers. Comparisons between HIV+ older adults and individuals with MCI-AD indicated that both groups performed similarly on attention ($p = .084$) (Milanini et al., 2019). Similarly, HIV+ older adults performed worse on attention compared to HIV-uninfected individuals (Ding et al., 2017; Watson et al., 2017). Moreover, e Silva and colleagues (2011) found that all of their cases displayed poor attention performance, with a mean z-score of less than -2. Additionally, attention deficits became more prominent with advancing age (Xiao et al., 2020). In line with these findings, Hellmuth and colleagues (2018) after following a 79-year-old man for almost four years and completing neuropsychological reports, found attention impairments throughout the years. In contrast, Milanini et al. (2016) found that in their sample of 60 older HIV+ adults, attention scores were within the normal cognitive range.

Language

Five out of the eight studies explored language deficits. Hellmuth et al. (2018) recounted a case study involving a 79-year-old man with untreated HIV and cognitive impairments. The patient initiated antiretroviral therapy (ART), leading to mild improvements in language. However, over time, impairments worsened, and progressive deficits in language continued for four years until his passing. In a Chinese sample living with HIV on ART, deficits in language were evident in all adults aged above 60, with those in the 80 or older group showing significant differences ($p = .001$) in language capacity (Xiao et al., 2020). Additionally, in another sample, the clinical presentation of HIV included a pattern of cortical and subcortical symptoms. Specifically, except for dyscalculia, visuo-spatial alterations, and praxia, 57.14% of cases exhibited language deficits (e Silva et al., 2011). In a comparison of older HIV-infected patients and demographically matched individuals with mild cognitive impairment of the Alzheimer's type, the latter group performed significantly worse on language ($p = .017$), with a statistically significant decline observed after a longitudinal examination (Milanini et al., 2019). In contrast, Milanini et al. (2016) found low scores of language decline, suggesting that cognitive reserve (CR) can represent a resilience factor against cognitive decline.

Discussion

This review aimed to understand the neuropsychological functioning in older adults with HIV and critically discuss the existing findings. Neuropsychological functioning in older adults with HIV appears to be on a decline, with memory, attention, executive functioning, and language showing the most significant declines. The review revealed that older adults with HIV perform worse in episodic and working memory tasks compared to younger HIV+ individuals (aged <60) and demographically matched HIV-uninfected individuals. However, their memory profile seems to be better than that of individuals with AD. The differences in memory changes were attributed to the widespread atrophy observed in most brain regions in individuals with AD, while HIV+ subjects demonstrated focal atrophy in frontal gray matter and the cerebellum (Milanini et al., 2019). Furthermore, language deficits are evident in HIV+ individuals, with research showing a positive correlation between language decline and advancing age (Hellmuth et al., 2018; Xiao et al., 2020). Although the rates of cognitive change were similar between HIV+ individuals and MCI-AD adults, language was the only domain in which the MCI-AD group performed worse (Milanini

et al., 2019). Progressive cognitive decay is typically observed in both HIV+ and AD individuals, but comparative studies provide insights into the different trajectories in memory and language observed in these specific populations.

Although HIV+ older adults have been found to perform worse on memory tasks compared to HIV+ younger adults, Ciccarelli and colleagues (2017) concluded that there is no interaction between age and HIV. However, this conclusion contradicts previous findings that indicated larger declines in verbal memory observed only in HIV+ older adults and associated with age (Seider et al., 2014). The discrepancies in these findings may be a result of methodological differences. For instance, the former study was cross-sectional and had a higher chronological cut-off for older HIV+ adults, while the latter was a longitudinal study that included seropositive and seronegative individuals aged 40-74 years. Furthermore, Ciccarelli et al. (2017) recruited only White, well-educated, and neuroasymptomatic individuals, limiting the generalizability of their findings, while Seider et al. (2014) included a more diverse sample. Finally, different tests were used to assess memory, potentially leading to different results.

Research in HIV+ adults has demonstrated that executive functions are of significant concern, as a substantial decrease with advancing age has been documented (e Silva et al., 2011; Hellmuth et al., 2018; Milanini et al., 2016). Previous studies have supported the idea that declines in executive functions and HAND are more prevalent in ageing patients due to advanced age and several other clinical factors, as well as comorbid health conditions, such as malignancies and vascular diseases (Fogel et al., 2014; Vance & Cody, 2015). It is important to mention, however, that men and highly educated individuals were found to perform better on executive function (Xiao et al., 2020). This finding aligns with previous research indicating that gender can impact global cognitive function in HIV+ older adults (Fogel et al., 2014). Future studies should strive for a more balanced representation of both sexes so that the effects of gender and education on HIV+ older adults can be better determined.

Attention was another neuropsychological function found to be significantly impaired in HIV+ older adults, supporting the hypothesis that HIV infection and older age can synergistically affect specific cognitive domains. Watson and colleagues (2017) discovered that the worse performance in attention compared to HIV-uninfected older individuals is related to white matter changes, with the greatest white matter hyperintensity volumes located in the frontal lobes. These findings align with previous research that reported associations between frontostriatal white matter abnormalities and associated frontal-executive cognitive deficits in HIV+ individuals (Ipser et al., 2015; Pfefferbaum et al., 2009; Plessis et al., 2014). However, Milanini and colleagues (2016), found in their sample that HIV+ older adults demonstrated normal attention, suggesting that higher CR may protect against the negative effects of ageing- and HIV-related impairments. Nonetheless, uncontrolled biases may have occurred in this cross-sectional survey. Therefore, future longitudinal studies are needed to confirm the findings and better clarify the impact of CR on cognitive functioning in elders with HIV.

Although this review has identified key findings regarding the neuropsychological functioning in older adults with HIV, certain limitations must be acknowledged. Despite an extensive search, a limited number of studies met our inclusion criteria, assessing only 812 HIV+ older individuals (aged ≥ 60), most of whom were males. Research has focused more on younger HIV+ individuals and males, while investigations into cognitive decline in HIV+ older individuals over the age of 60 and females are scarce. Furthermore, our study was limited to research published in English, which means that we may have potentially missed other relevant studies. Given the continued prevalence of neurocognitive decline in ageing people living with HIV, additional follow-up studies are warranted. These studies should not only observe the trajectories of cognitive changes among HIV-infected individuals but also document the differences between genders.

Conclusions

Given the widely available access to therapy and extended life expectancy, ageing with HIV reflects a novel phenomenon. However, the impacts on the ageing brain structure and cognitive functioning are not yet fully understood. The current review has demonstrated severe impairments in neuropsychological functions, namely memory, executive functions, language, and attention,

in HIV+ older adults (aged ≥ 60). In clinical settings, these results could aid in implementing prevention and rehabilitation strategies against impairments in cognitive performance in HIV+ populations. As the HIV+ population gets older, neuropsychological assessments are mandatory to both prevent and understand cognitive declines over time. Longitudinal studies should also be employed to more accurately examine the neuropsychological and everyday functional trajectories of this population. Most research has focused on younger individuals or has set the cut-off point at 60 years of age. Therefore, research on older HIV+ adults over 60 must be conducted. Living with HIV and getting older brings a unique set of clinical needs and diagnostic issues. Hence, further research is considered of great importance to illustrate the cognitive declines experienced and inform new ways of treatment.

Declaration of Interest

The authors declare no competing interest.

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UNCOVERING BRAINWORKING RECURSIVE THERAPY: A COMPREHENSIVE EXAMINATION OF SUBCONSCIOUS RESPONSE MECHANISMS AND THERAPEUTIC APPLICATIONS

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Abstract

This study provides a comprehensive examination of BrainWorking Recursive Therapy (BWRT), an innovative psychotherapeutic approach that leverages insights from neuroscience and consciousness studies. The study traces BWRT’s theoretical foundations in research on neurological processes and the “cognitive gap” between stimulus and response. It outlines BWRT’s evolution into a structured therapy model with demonstrated effectiveness for trauma, anxiety, depression, and other conditions. The narrative highlights BWRT’s adaptability, aligning with digital mental health trends and interdisciplinary research directions. While critiquing limitations like lack of longitudinal data, the article situates BWRT as a promising science-based therapy warranting ongoing empirical scrutiny and innovation. BWRT was developed by drawing on concepts like the triune brain and findings on subconscious neural activity. The therapy focuses on targeting automatic response patterns mediated by the reptilian complex. BWRT has faced scepticism during its evolution but continues to gain recognition through evidence-based research. Further studies on long-term outcomes and comparative efficacy can help consolidate BWRT’s position as an innovative psychotherapy model. Ongoing advances in neurotechnology present new opportunities for enhancing BWRT methodologies and expanding its applications.

Keywords: *comparative efficacy, digital mental health, evidence-based research, neuroscience*

Introduction

Psychological therapy continuously evolves as researchers and practitioners delve deeper into the complexities of the human mind (Fleuridas & Krafcik, 2019; Gilbert, 2020; Hoffman, 2014). The burgeoning field of neurobiology has paved the way for innovative intersections between therapeutic methodologies and neurological understanding (Arévalo et al., 2022; King & Prada, 2021; Rabeyron & Massicotte, 2020). These intersections have been crucial in developing new therapeutic models, including the pioneering BrainWorking Recursive Therapy (BWRT). Advances in neuroimaging, genetics, and behavioural science have provided new perspectives

on the biological underpinnings of mental health. Integrating these perspectives with clinical wisdom gleaned from psychotherapy practice is enriching the “mind-brain connection” frameworks guiding therapeutic innovation. BWRT exemplifies this integration, leveraging empirical neuroscience to refine techniques targeting the cognitive-emotional drivers of psychopathology.

BWRT’s origin is linked to academic discussions on the “fight-flight-freeze” response (Donahue, 2020) and its relation to the reptilian complex of the brain (Naumann et al., 2015). The theory was catalysed by Libet’s (1985) discovery of the “cognitive gap,” indicating that human free will might not operate conventionally. This insight opened doors for innovative interventions in psychological therapies (Capobianco et al., 2023; Gulnoza et al., 2023; Miller et al., 2023). Understanding the automatic nature of threat reactions mediated by primordial brain structures led BWRT developer to focus on reshaping those reactions. Libet’s finding of a brief window between stimulus and conscious response was also pivotal, suggesting an opportunity to intervene at the subcortical level. By targeting ingrained response tendencies, BWRT aims to foster more intentional, adaptive patterns aligned with long-term well-being (Vansteenkiste et al., 2020).

Throughout its development, BWRT has faced scepticism and challenges but has evolved into a promising therapy model, especially for managing trauma and anxiety disorders (Marsay, 2020; Refvik & Stavland, 2020; Sepeng et al., 2019). This article presents a narrative journey from BWRT’s inception to its current status, highlighting its significance in psychotherapeutic innovation and robust scientific methodologies. Clinicians were initially sceptical of BWRT’s unconventional approach targeting subconscious processes (Relajo-Howell, 2023; Watts, 2023). However, growing recognition of the brain’s automatic threat reactions helped overcome this resistance over time. Controlled trials demonstrating BWRT’s efficacy built credence, leading more practitioners to adopt the method. BWRT’s applicability across diverse client populations and issues proved its flexibility as an accessible option. The development of standardised training and certification programmes has also improved quality control in BWRT implementation. While work remains in consolidating its evidence base, BWRT has established itself as a versatile new therapy holding great promise for trauma-related conditions. Its journey reflects the value of persisting through scepticism when pioneering novel science-based approaches with transformative potential.

BWRT’s theoretical underpinnings are a blend of neuroscientific research and practical psychotherapy. The initial stimulus for BWRT’s development was a 2011 article on subconscious brain activity, which discussed experiments showing a measurable gap between brain reaction to a stimulus and conscious awareness of that reaction (Clarke, 2013; Libet, 1999; William, 2006). This gap, often linked to the lack of free will in the conventional sense, was a critical factor in shaping BWRT. Research on the “cognitive gap” and automaticity of threat responses emboldened BWRT developers to target subcortical processes (e.g., Gonzales et al., 2014). The therapy aims to utilise the brief window between stimulus and awareness to establish more helpful associations. By repeatedly reinforcing these new links, BWRT seeks to override ingrained maladaptive reactions mediated by the reptilian brain (Finkelstein, 1992).

The theoretical foundations combined with empirical research catalysed the development of BWRT into a structured psychotherapy model. Controlled studies demonstrate BWRT’s efficacy for treating trauma, anxiety, depression, and other conditions. Qualitative assessments also reveal benefits such as improved emotional regulation and post-traumatic growth (Henson et al., 2021). While critiques emphasise the lack of longitudinal data, BWRT continues to gain recognition as an evidence-based therapy. Further research can consolidate BWRT’s position at the intersection of neuroscience, consciousness studies, and clinical psychology.

Theoretical Foundations

Further exploration into neuroscience highlighted a delay in information transfer due to the brain’s physical structure and bioelectricity (Farkas et al., 2023; Hawking & Mlodinow, 1988; Science.org, 2008). This delay is integral to BWRT’s approach, which targets the cognitive gap

between stimulus and conscious response. The propagation time of signals across brain networks shapes the nature of cognition and behaviour. Rapid threat reactions mediated by subcortical structures precede slower top-down control processes. BWRT leverages this temporal cascade, aiming to modify automatic responses before conscious processes override them. Repeated practice at installing helpful associations then allows new patterns to persist once conscious awareness takes hold.

The concept of the triune brain, proposed by MacLean (Dahlitz, 2015), provided a framework for understanding psychological processes. BWRT leverages this concept, focusing on the “reptilian complex” or “lizard brain” (Schutter & Honk, 2004). This part of the brain, primarily concerned with survival instincts, is believed to drive many of our automatic responses. The triune model elucidates the bottom-up nature of threat reactions, stemming from primordial structures. BWRT uses techniques aimed at retraining those reactions at their neurological source. By repeatedly accessing the reptilian complex’s pattern recognition function, new associations can be forged linking stimuli with adaptive rather than maladaptive reflexes. This top-down reconditioning ultimately seeks to bring intentionality to formerly reflexive responses (Toates, 2006).

The development of BWRT also considered the evolutionary aspects of the brain, hypothesising that modern human brains are still primarily driven by the primitive first responder to events (Hublin et al., 2017; MacLean, 1985). This perspective is pivotal in BWRT, as it targets the reptilian complex’s inherent responses to stimuli. The notion that our brains retain ancestrally programmed reactions shapes BWRT’s focus on automatic threat responses. Despite higher cognition, primal defence reactions remain reflexive due to their life-preserving evolutionary origins. BWRT providers emphasise this persistence of primitive systems, highlighting the need to consciously re-pattern them. By recognising the evolutionary roots of maladaptive responses, clients can dis-identify from those reactions and choose more reflective alternatives (Siegel, 2013).

BWRT aligns with the idea that urgency is a prime motivator for learning and adaptation in the brain (Goldberg, 2022). This aligns with BWRT’s focus on modifying the immediate, subconscious responses to stimuli, tapping into the brain’s natural learning processes. The brain’s innate drive to resolve urgent threats provides an opportunity for BWRT to reshape engrained response tendencies. By replacing a distressing automatic reaction with a newly associated adaptive response, the urgent novelty of that change grabs the brain’s attention. The reptilian complex’s role in appraising threats enables BWRT to target the neural foundations of maladaptive reactions. Repeatedly cementing helpful new associations ultimately allows more deliberate, values-based responding to supersede reflexive patterns.

Mapping the neurological foundations further legitimised BWRT as a science-based therapy. Understanding the triune brain and reptilian complex provided a blueprint for targeting automatic cognitive-emotional patterns. The evolutionary lens also explained why these primitive responses persist despite higher cognition. By aligning with neuroscience, BWRT gained credibility as an evidence-based intervention. Ongoing research continues to reveal neurological correlates of BWRT’s therapeutic mechanisms.

Clinical Applications and Methodologies

BWRT’s practical application has evolved considerably since its conception. Initially, the therapy targeted the gap identified by Libet, aiming to utilise this brief window to influence subconscious responses (Libet, 1999; William, 2006). The therapy’s early stages of development involved introspection and thought experiments, heavily relying on the clinician’s experience (Clarke, 2013).

As BWRT developed, it became evident that despite scepticism about Libet’s research (2002), the gap between reaction and awareness was a consistent neuroscientific finding, supporting the therapy’s foundational concept (Farkas et al., 2023; Hawking & Mlodinow, 1988; Science.org, 2008). The reptilian complex’s role in this process, particularly its pattern-matching function to previously encountered situations, became a focal point of BWRT’s methodology (Novak,

2008). The therapy has shown effectiveness in managing trauma and anxiety disorders, where the reptilian complex's immediate responses can be pivotal (Marsay, 2020; Refvik & Stavland, 2020; Sepeng et al., 2019). By focusing on the "freeze response" and introducing a "replacement response", BWRT allows individuals to reframe and process traumatic experiences in a manner that reduces associated anxiety and distress, which can also improve their levels of resilience (e.g., Relajo-Howell, 2020).

BWRT's approach is also notable for its adaptability to various psychological conditions. Its structured, step-by-step procedure has been applied successfully to a range of issues, including phobias, panic attacks, and other anxiety-related disorders. The therapy's flexibility in crafting individualised 'replacement responses' has been key to its effectiveness. BWRT continues to evolve through ongoing research and clinical insights. Wider recognition of neurological patterns has expanded BWRT's application to mood disorders, addictions, and relationship issues. Advances in neuroimaging have provided biological evidence for BWRT's mechanisms of change. As a responsive, evidence-based therapy, BWRT retains its relevance through incorporating new findings.

Mechanisms of Change

In addition to gathering empirical evidence for its clinical effectiveness, research has also aimed to elucidate the mechanisms through which BWRT facilitates therapeutic change. Studies indicate that BWRT may exert its effects partially through modulating activity in brain regions like the amygdala and medial prefrontal cortex that are involved in threat, anxiety, and emotional regulation.

Neuroimaging techniques have revealed decreased amygdalar activation following BWRT interventions, aligning with reductions in anxiety symptoms. This points to BWRT's capacity to alter threat-response patterns mediated by the amygdala. Changes in prefrontal cortical activity and connectivity have also been observed, suggesting improved cognitive control of emotions and trauma responses. Enhanced prefrontal regulation likely facilitates the replacement of distressing subcortical responses with more adaptive thinking patterns.

Ongoing research aims to further elucidate BWRT's effects on threat perception, emotional regulation, and associated neurological processes. Determining these mechanisms of change can strengthen the empirical foundations and optimise the delivery of this promising therapy. Specifically, functional magnetic resonance imaging (fMRI) studies indicate BWRT may decrease hyperactivity in the amygdala and increase activation of the medial prefrontal cortex. This normalisation of threat-processing and emotional regulation circuits likely underlies clinical improvements. Critically, changes in brain activity appear sustained at follow-up assessments, aligned with durable treatment gains.

BWRT also seems to affect connectivity within and between critical limbic regions. Enhanced functional coordination of areas like the amygdala, hippocampus, and prefrontal cortex suggests more integrated emotional processing following BWRT. Researchers posit these neural effects are initiated by the process of replacing conditioned threat responses with alternative non-distressing associations through BWRT procedures. This facilitates reorganisation of maladaptive response patterns mediated by subcortical structures. The effects also involve strengthening of top-down cognitive control mechanisms supported by the prefrontal cortex.

BWRT's recursive nature, repeatedly reinforcing helpful associations, may aid in consolidating the neuroplastic changes underlying successful treatment. While current research is promising, further studies with larger samples are needed to replicate findings and clarify individual differences in neural mechanisms. Combining neuroimaging with behavioural assessments and genetic analysis holds promise for identifying biomarkers and profiles to optimise BWRT. Translational approaches examining changes from neural circuitry up to symptoms will provide a more definitive account of how BWRT reshapes threat perception and emotional reactivity at multiple levels.

Elucidating neuromodulatory effects of BWRT also has implications for novel brain-based interventions like neurofeedback, transcranial magnetic stimulation, and targeted pharmaceutical agents. Overall, advancing understanding of the neurological changes accompanying BWRT will enable finer-grained applications and enhancements, facilitating personalised mental healthcare.

BWRT in Digital Mental Health

The rise of digital mental health solutions has opened new avenues for BWRT’s application. As online therapy platforms become more prevalent, BWRT’s principles have shown promising adaptability to these formats (Capobianco et al., 2023). This adaptability is particularly relevant considering the increasing need for remote mental health support during and following the COVID-19 pandemic (Relajo-Howell, 2022).

BWRT’s core technique, which involves working with subconscious responses, is well-suited for digital platforms. These platforms can facilitate the structured approach of BWRT, allowing therapists to guide clients through the therapy process remotely. This approach aligns with the need for innovative and accessible mental health solutions in a digital age.

Furthermore, the potential integration of BWRT into mental health apps presents an exciting opportunity. By leveraging BWRT’s methodologies in app-based formats, users can access self-help tools grounded in BWRT principles. This could significantly enhance the reach and impact of BWRT, making it accessible to a broader audience who may not have access to traditional therapy settings.

As digital mental health continues to evolve, BWRT’s place within this domain is poised for growth. Its adaptability to online and app-based formats, combined with its effectiveness in managing a range of psychological issues, positions BWRT as a valuable tool in the expanding landscape of digital mental health. Pilot studies have demonstrated BWRT’s viability in online formats across diverse demographics (Mohamed et al., 2023). Widespread adoption still faces challenges like clinician training and engagement. However, the promise of increased access shows BWRT’s potential to meet rising mental health needs through digital delivery (Watts, 2022).

A particular advantage of BrainWorking Recursive Therapy (BWRT) compared to standard therapies is that it does not require Systematic Desensitisation or the discovery of an Initial Sensitising Event (ISE) when addressing complex psychological conditions. These concepts involve conscious processing, triggered by the amygdala’s response to neural stimuli from the reptilian complex. BWRT disrupts this stimulus, replacing it with a benign or rational process.

Quality control is paramount in BWRT. To this end, the entire training procedure emphasises the importance of adhering to the precise protocol structure that has been fundamental to the process since its inception. There is no point in the protocol where a practitioner can introduce their own therapeutic ideas or innovative processes. Therefore, the implementation should be essentially identical, regardless of where or by whom it is delivered.

Future Directions and Research

As BWRT continues to evolve, its intersection with emerging technologies and interdisciplinary research presents exciting future prospects. Collaborations between BWRT practitioners and neuroscientists could lead to deeper insights into the therapy’s effectiveness and the neurobiological basis of its mechanisms (Arévalo et al., 2022; King & Prada, 2021; Rabeyron & Massicotte, 2020). Such research could validate and refine BWRT’s methodology, enhancing its credibility and applicability in various psychological conditions (e.g., Zhou et al., 2023).

Technological advancements, particularly in artificial intelligence and virtual reality, could offer new ways to enhance the BWRT experience (e.g., Das & Relajo-Howell, 2021). These technologies could be used to create more immersive and interactive therapeutic environments, potentially increasing the therapy’s effectiveness and appeal. Moreover, continued research into the long-term efficacy of BWRT is essential. Studies focusing on the sustainability of treatment

outcomes will be crucial in establishing BWRT as a reliable therapeutic option in the long run. This research could involve longitudinal studies tracking patients' progress post-therapy, providing valuable data on the lasting impact of BWRT on mental health. BWRT's evolution relies on ongoing empirical validation and innovation to cement its position amongst evidence-based therapies. Its intersectional nature provides opportunities for growth through emerging technologies and deepening scientific insight. With continued research and development, BWRT aims to fulfil its potential as a transformative force in mental healthcare.

Critical Analysis

While BrainWorking Recursive Therapy (BWRT) has shown promising results in various clinical settings, it's important to critically analyse its limitations and challenges. One notable limitation, as identified by Refvik & Stavland (2020), is the absence of systematic desensitisation or the identification of an Initial Sensitising Event (ISE) in the BWRT model. This could be a drawback when dealing with complex psychological conditions, where understanding the root cause of symptoms is crucial, as suggested by Borsboom (2017).

Moreover, the efficacy of BrainWorking Recursive Therapy (BWRT) compared to other established therapies like cognitive behavioural therapy (CBT) and dialectical behaviour therapy (DBT) is an area that warrants further exploration. Comparative studies could provide deeper insights into BWRT's effectiveness and applicability in different psychological conditions. Additionally, more research is needed on BWRT's long-term outcomes and preventative capabilities. While initial results are positive, data on sustaining benefits over time are limited. Understanding BWRT's potential in relapse prevention could further validate its role in comprehensive mental healthcare. Critics also argue that a lack of standardised training and implementation guidelines limits quality control over BWRT delivery. Establishing rigorous training protocols and practice standards could address inconsistencies in practitioner competency and therapy administration. Ongoing scrutiny, coupled with further research, provides important opportunities for BWRT to address its limitations. This critical analysis ultimately aims to refine BWRT and position it as a viable evidence-based therapy option.

Conclusions

The development of BrainWorking Recursive Therapy (BWRT) marks a significant advancement in the field of psychological therapies. Its foundation on neuroscientific principles, combined with its innovative approach to addressing subconscious response mechanisms, positions BWRT as a potentially transformative method in treating trauma and anxiety disorders. As BWRT continues to evolve, further research and adaptation will undoubtedly refine its methodologies and expand its applications. The integration of BWRT into digital mental health platforms also presents an exciting avenue for making therapeutic techniques more accessible and adaptable to modern lifestyles. BWRT's journey from its conceptual genesis to its current application underscores the importance of innovation and scientific rigor in the evolution of psychotherapeutic interventions. It offers a promising approach that aligns with the growing demand for effective, science-based, and accessible mental health solutions.

Additionally, BrainWorking Recursive Therapy's (BWRT's) reliance on the therapist's skill in guiding the recursive process is another aspect that needs consideration. The therapist's ability to navigate and modify subconscious responses is central to the therapy's success, which could vary significantly among practitioners. Moreover, the therapy's application in more complex mental health conditions, such as severe depression or personality disorders, has yet to be extensively studied. Understanding these limitations and adapting the therapy to suit a wider range of conditions would be crucial for its broader application.

As with any novel therapeutic approach, prudent critique coupled with empirical research will shape BWRT's ongoing development. While challenges remain, BWRT demonstrates the potential of evidence-based innovation in advancing mental healthcare.

Declaration of Interest

The authors declare no competing interest.

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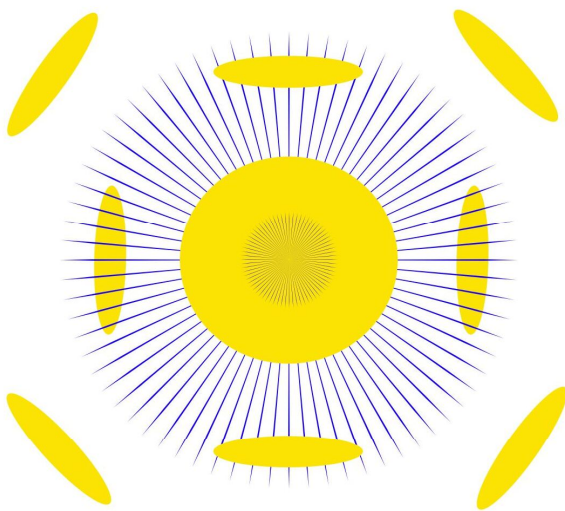
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